



VOL. XXX.

CLEVELAND, O., AUGUST 18, 1904.

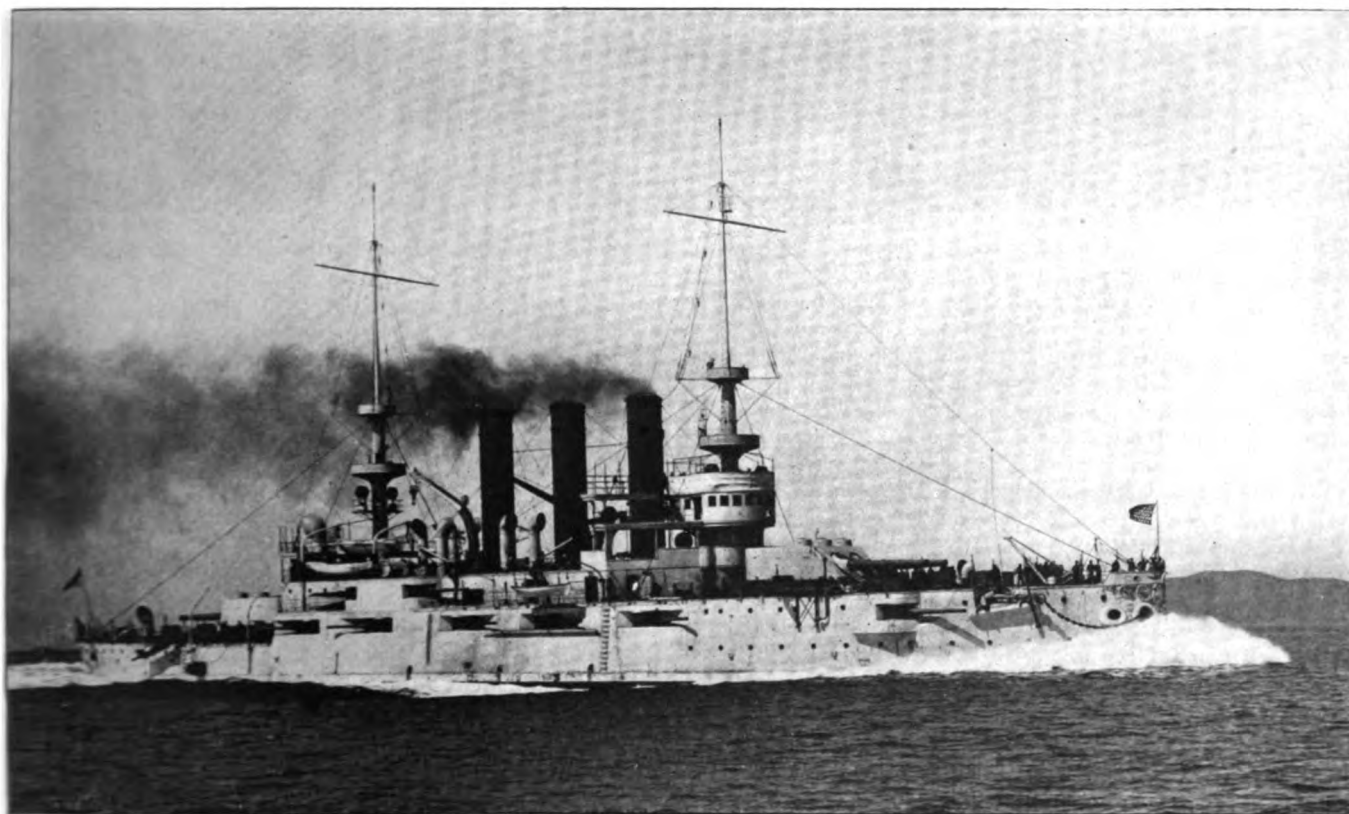
No. 7.

### THE GREAT BATTLESHIP OHIO.

The new battleship Ohio, built at the Union Iron Works, San Francisco, has just completed her official trial trips and will very soon be placed in active commission. These trials of

speed. Her immense, ponderous machinery worked very smoothly. During the long and trying run the engines developed 2,000 H. P. in excess of the government requirement.

After completing the 72-mile course one hour and a half was



BATTLESHIP OHIO ON HER TRIAL TRIP.

speed were made over the regular government course laid out in the famous Santa Barbara channel. This course is 36 miles long, and the vessel was required to steam twice that distance. The two torpedo destroyers Paul Jones and Preble acted as stake boats. Between these stake boats the Annapolis, Farragut, Solace and other war vessels were stationed along at intervals to make careful and accurate observations regarding tidal currents, the winds, and also to mark the time made by the new battleship.

For four hours the Ohio was "put through her paces" at top

speed. She behaved magnificently, obeying quickly her helm. Although both tidal currents and winds were adverse, the battleship realized within less than one-fifth of a knot her speed requirement of 18 knots.

The Ohio was launched May 18, 1901, in the presence of the late President McKinley. Miss Mary Barbour, a niece of the president, touched the electric button that started the huge hull down the ways. Miss Helen Deshler, a relative of Gov. Nash of Ohio broke the champagne bottle on the bow and christened

the great war craft. Both young ladies are fair daughters of the old "Buckeye" state.

No war vessel was ever launched in the United States with more imposing ceremonies, or witnessed by a larger crowd of enthusiastic spectators. Besides President McKinley, there were members of his cabinet, consulate representatives of foreign powers, Gov. Nash, many distinguished men from all over the union, a number of high ranking naval and military officers, and prominent visitors from all parts of the Pacific coast. The naval pageant of war vessels, supplemented by a large fleet of harbor steamers, was brilliant and impressive. It is estimated that not less than 75,000 spectators witnessed the launching of the battleship.

In every essential—weight of metal thrown, destroying power of guns, speed in class, armor and appliances, the Ohio, as now equipped, is in the very first rank of the world's great battleships.

The Ohio is 388 ft. long at the water line; extreme beam 73 ft.; mean draught  $23\frac{1}{2}$  ft.; total displacement 12,440 tons; full load displacement 13,941 tons. Her armor consists of a water line belt of 11 in. at the top,  $7\frac{1}{2}$  in. at the bottom, a 6-in. protection above the main belt, and 6-in. superstructure armor.

Her main battery consists of four 12-in. breech loading rifles, and sixteen 6-in. rapid firing guns. The secondary battery consists of six 3-in. rapid firing guns; eight 6-pounder rapid firing guns; six 1-pounder rapid firing guns; two 2-pounder rapid firers, and two Colts.

Two other vessels in the American navy have also borne the name of Ohio. The first Ohio, a small schooner carrying three guns, was built in 1813, and captured by the British in 1814. The second Ohio was a ship of the line begun in 1817 and launched May 30, 1820. The history of the latter, although not remarkable by any unusual events, is nevertheless of historical interest. The second Ohio was designed by Henry Eckford, whose skill as a private ship builder in New York had attracted the attention of the secretary of the navy.

Eckford accepted the appointment as a constructor in the navy July 13, 1817, and four months later the keel of Ohio II was laid. Notwithstanding many obstacles, the vessel was launched thirty months later, practically completed for sea. At that time the affairs of the navy was managed by a board of navy commissioners, consisting of naval officers, of which Commodore John Rodgers was the president.

During the construction of Ohio II, there was considerable friction between Rodgers and Eckford, resulting in the latter leaving the navy one week after the launching of the new war vessel because of an intimation that the Ohio would not be placed in commission while Rodgers held office as a naval commissioner.

Eckford resumed his former occupation, and finally accepted the position of chief constructor in the Turkish navy. His sudden death which occurred in 1832 was somewhat mysterious, and has been attributed to corrupt Turkish officials.

Meantime Ohio II, lay rotting at her moorings at the Brooklyn navy yard; and it was after Rodgers left the navy in November, 1837, that the vessel was repaired at an expense of nearly \$300,000 and fitted for her first cruise, which began Oct. 16, 1838—eighteen years after her launching.

She made a three-years' cruise in the Mediterranean, and finally returning, was laid up for seven years after which she made another three years' cruise in the Pacific, and returned to the Boston yards. Her active service came to an end in August, 1853, after which she served as a recruiting ship. On Sept. 24, 1883, the Ohio was condemned and sold for \$17,100.

Ohio II, was the only ship of the line in the American navy that early entered San Francisco harbor. She arrived there November, 1848, and remained until the following September. Her stay at San Francisco was marked by a tragic event—the hanging of two captured deserters, members of her crew. One

was hanged from the yard arm of the old frigate Savannah.

There was no other ship in the navy of her class so favorably reported upon as the Ohio, she being exceptionally rapid—going 13 knots free steering like a pilot boat, and rolling but little under any circumstances.

The changes which naval vessels have undergone since Ohio II, the crack ship of the navy eighty years ago, was built, are to be realized by only those who have manned the old navy and now see the new and magnificent Ohio III.

The relative efficiency of ships of the several navies is the same now as then. The changes since the introduction of steam, discarding sail power, addition of armor as a protection, and improvement in ordnance, has been gradual and is still progressing.

Naval tactics owing to these advances has of necessity changed also; and it may even be claimed that present naval warfare, notwithstanding its many modern murderous contrivances, is not so destructive as it was eighty years ago. But modern ships are certainly far more expensive in their first cost than the old, as the comparative cost of the old and new Ohios indicate. The total cost of Ohio II, was \$547,889, a sum barely sufficient to cover the cost of the armament alone of the present new battleship. Of this sum \$294,043 was the cost of the hull, while the corresponding cost of the vessel that has just made her successful trials is not less than \$2,000,000, not including the armor, equipments, etc., that have approximated \$1,000,000 more.

The most marked differences between the old and new Ohios are their changed methods of propulsion and their means of offense and defense—the two latter especially.

The heaviest guns on Ohio II, weighed about 6,100 lbs., fired a solid shot of 68 lbs., or a shell of  $51\frac{1}{2}$  lbs., with a charge of seven pounds of powder, and had an effective range of 1,866 yards.

The 12-inch guns of the new Ohio will each weigh 116,480 lbs., throw a shell weighing 850 lbs. with a powder charge of 425 lbs., and could penetrate both sides of an old ship of the line at a distance of 10 miles, or 17,600 yards.

The 32-pounders of Ohio II, had powder charges of only 4 lbs., carried 1,637 yards at an elevation of  $6^\circ$ , and fired not more than twice in one minute; whereas the modern 6-in. rapid firer of the present Ohio discharges six shells weighing 100 lbs. per minute, and will penetrate 5 in. of Krupp armor at 2,000 yards.

In a gun fight of only five minutes' duration, the new Ohio would discharge 60,000 lbs. of metal, representing an expenditure of \$26,000. Thus, in actual warfare, the modern battleship, while far more expensive than its predecessor, is also more expeditious and decisive.

Long-range duels by means of the improvements in mechanics have superseded the old style of yard arm to yard arm fighting; and there is no more boarding nor consequent breaking of skulls by cutlasses, or maiming by boarding pikes.

The series of experiments undertaken at Cherbourg by the coastguard cruiser *Furious* of the French navy were eminently successful. During a preliminary experiment of two hours' duration the cruiser developed 4,957 H. P. upon a combustion of 118 kilos of coal per grate meter per hour. The working of the Belleville generators was economical and perfect. Telegraphic advices are also to the effect that the 24 hours' performance of the French ironclad *Descartes* of 8,500 H. P. was most satisfactory and that the Belleville boilers worked excellently. The French cruiser *Duplex* also achieved a speed of 20.7 knots, developing 17,066 H. P., the Belleville generators meanwhile working without a hitch.

The protected cruiser *Milwaukee* will be launched on Sept. 10 at the yard of the Union Iron Works, San Francisco.



TROPHY FOR TARGET PRACTICE OF TORPEDO BOATS OF THE UNITED STATES NAVY.

[Designed by Henry Reuterdaahl, Associate Member United States Naval Institute.

Through the efforts of Lieut. Com'dr W. S. Sims, inspector of target practice United States navy, the entire system of target practice has been revolutionized in the navy. From the 3 per cent. scores at Santiago the United States navy has now developed into the best shooting navy in the world. Money prizes, extra pay to gun pointers and trophies for various classes of ships have stimulated the men behind the guns in raising their records. The torpedo boat trophy was won by destroyer Paul Jones of the Pacific fleet.

#### LIVERPOOL SHIPPING LETTER.

Liverpool, Aug. 8.—It has now been announced that the conference in regard to the disastrous Atlantic rate war will be held in Hamburg, the time fixed, being the beginning of next month. Herr Ballin, general manager of the Hamburg American Line, will preside over the deliberations, and a high official from the British Board of Trade will be in attendance. It is earnestly hoped that all parties to the struggle will calmly weigh their differences and arrive in due course at an amicable settlement which will once more bring the steerage rates to a paying level.

The British House of Commons has this week practically ratified the agreement with the Cunard company by passing a resolution authorizing the issue out of the consolidated fund of \$13,000,000 required to make advances to the Cunard company under the agreement dated July 30, 1903. Quite a heated discussion took place on the resolution, several members asserting that the agreement was only entered into by reason of the panic occasioned by the Morgan combine, but which had now passed. There may be something in this, but shipping men generally take the opposite view. One of them, Mr. Rea, at the time the agreement was first entered into, really did not think the Cunard company had much to congratulate themselves upon. In the whole, in fact, he was inclined to congratulate the company more upon their courage in taking that contract than upon their luck in getting it. Sir William Allan, another shipping member, considered that from the

financial point of view, the government had got the best of the bargain, or at all events that the government is getting full value for its money.

With reference to the contract the Cunard company have entered into with the Hungarian government, it may be mentioned that the company binds itself to put into the Fiume and New York service three first class steamers, and a fourth if required, with twin-screws, a measurement of 10,000 tons register each, and a speed of 12 to 14 knots. The sailing program of the line, to be known henceforth as the Cunard-Hungarian Line, must always be fixed in advance for six months and submitted to the minister of the interior for his sanction. The contract is for ten years from the 4th of June last, and the company are bound to bring back to Hungary at a reduced rate—up to as many as 500 in a year—destitute Hungarian subjects desirous of returning from America. From reports to hand from Vienna at the time of writing it seems that the fight between the Cunard and German lines is leading to a conflict between the Hungarian and Austrian governments.

In shipping circles, considerable interest has been evinced in the arrangements the British admiralty are making for the naval maneuvers with the object of thoroughly testing the usefulness of merchant vessels to act as transports in time of war. The idea to be carried out is one of invading this country, and among the steamers chartered from Liverpool owners to assist in these important maneuvers are said to be three Leyland liners, one Grange and one Prince steamer.

It is reported, however, that there are altogether a dozen chartered from this port for a period of a month.

The returns issued by the Liverpool Underwriters' Association as to the casualties to vessels of 500 tons gross register and upwards which have been posted in the Loss book during the month of July, show that the total was 315, of which seventeen were total and 298 partial losses. The totals for the corresponding months of the three preceding years were 357, 327, and 378 respectively. The tonnage of the vessels totally lost last month was: British: Sail two of 2,276 tons, and steamers six of 11,430 tons; July, 1903, four steamers of 14,011 tons. Foreign: Sail three of 2,197 tons, and steamers six of 12,309 tons; July, 1903, sail six of 7,859 tons, and steamers three of 5,447 tons. The nature of casualty is returned as follows: Weather damage, eight; foundering and abandonments, six; strandings, 115; collisions, 99; fires and explosions, seventeen; damage to machinery, shafts and propellers, forty and other casualties eight.

The Mersey Docks & Harbor board continue to evolve new schemes of dock improvements and extensions, the latest one made known at this week's meeting of the dock board involving the expenditure of \$1,110,000. It provides for an extension of the Brunswick dock over the site of the Union dock and Brunswick graving docks, and a passage 100 ft. wide thereto with the necessary swing bridge. The effect of the alterations will be to give a shed 1,800 ft. long and 150 ft. wide on the east, and a shed 450 ft. to 500 ft. long on the western side of Brunswick dock as well as an improved passage both as regards width and depth. The port of Liverpool is keeping pace with the big ships, and when the schemes of dock extensions and improvements, which will bring the older docks much more up-to-date, are completed, the Liverpool dock system will undoubtedly be the finest and most accommodating in the world.

Mr. Basil H. Joy, the technical secretary of the Automobile club, has forwarded to me an extract of the report of the judges in the recent motor-boat trials, which will be presented to the committee today, Aug. 8. The judges, Major Lindsay Lloyd, Lieut. Mansfield Cumming, and Capt. R. E. T. Dixon, after dealing with the number of competitors and general arrangements of the trials, express their satisfaction at the results of the boats taking part, only two of the sixteen starters failing to complete the 20 hours' run, five boats making complete non-stop runs. The report proceeds with an appreciation of the good performances of the Seal and Vosper boats using ordinary paraffin, and of the good general condition of all the boats at the termination of the 20 hours' trial. One of the most important recommendations of the report is dealt with at some length, namely, that of the safety of boats fitted with internal combustion engines, and the effects of this recommendation should be evident in next year's trials. The question of convenience of general arrangement of details is also treated of, the Napier Minor and the Mandslay boat being taken as examples of excellence in this direction. The report concludes by recommending the following awards:

Class II.—Seal Motor Company, 2½-H. P., 18 ft. launch, gold medal. Class III. Vosper & Co., 12-H. P., 22 ft. launch, gold medal. Mitcham Motor Co., 6-H. P., 22 ft. launch, silver medal. Class IV, Mandslay Motor Co., 20-H. P., 25 ft. launch, gold medal; Woodnutt & Co., 10-H. P., 30 ft. launch, silver medal. Class V. Mr. S. F. Edge, 25-H. P., 35 ft. launch, gold medal. Class VI. J. J. Thornycroft & Co., 20-H. P., 30 ft. launch, silver medal.

The White Star liner Germanic is apparently being relegated again to the Southampton-New York service, instead of, as was recently announced being placed on the Liverpool and St. Lawrence trade under a new name. It appears that the Canadian lines objected to the Dominion portion of the

combine berthing this steamer as likely to upset their arrangements, and to preserve the peace there was nothing for it but to abandon the idea. The Germanic is now announced to sail from Southampton on the 6th inst. for New York, and she has left this port for that purpose.

Some 200 members of the Institution of Civil Engineers of Great Britain, will leave Liverpool on Sept. 3, by the Cunard liner *Etruria* for a visit to the principal cities of the United States and Canada, and to the St. Louis exhibition.

The effect of the American meat strike on the trade of Birkenhead and Liverpool remains practically unchanged. Heavy shipments of live cattle continue to arrive at the Woodside lairages, and notwithstanding lowered prices, the stock considerably exceeds the demand. This may be partly attributed, however, to the holidays. Prices show little tendency to improve. The shortness of the supplies of chilled beef will probably be more felt next week than at any period up to the present.

On Monday Messrs. Workman, Clark & Co., Limited, Belfast, launched a screw-steamer, which is one of three vessels being built by them for the Tropical Fruit Steamship Co., Limited, of Glasgow, Messrs. Clark & Service, managers. The steamer has been named *Limon*, and is one of the largest vessels yet constructed for the carrying of fruit, being 343 ft. in length. She has been specially designed for the transport of bananas and other tropical fruits from the West Indies to Boston, and is thoroughly equipped with all the latest devices which extensive experience can suggest to ensure careful and expeditious handling of these tropical products. The *Limon* has three decks, extending the entire length of the vessel, and the space allotted for cargo is divided into capacious compartments by steel bulkheads continued to the upper deck; these compartments or holds will be insulated, and a most complete system of refrigerating machinery, with air ducts to every hold. A large steel deckhouse has been erected on the upper deck amidships, and at the fore end of this is placed a dining saloon, with large airy staterooms on either side for a number of first class passengers. From this saloon is a stairway leading to a steel deckhouse on the promenade deck, in which are additional staterooms and a smoking room. Commodious apartments for the requirements of the officers and engineers are provided in the 'midship deckhouse, whilst accommodation for the crew is arranged in a deckhouse on the after part of the upper deck. The vessel will be driven by triple-expansion engines of the latest type, and steam will be generated by three steel cylindrical multitubular boilers working under Howden's system of forced draft. The construction of the vessel and machinery is being carried out under the supervision of the British corporation to qualify for the highest class in their registry.

The Fulton Iron Works of San Francisco, Cal., has just completed for the Pacific Mail Steamship Co. the new tug *Arabs*. The steamship company found it necessary to add this tug to its fleet in San Francisco harbor owing to the increasing size of the vessels of its fleet, having added recently the *Mongolia*, *Manchuria*, *Siberia* and *Korea*. The *Arabs* is one of the most powerful tugs in San Francisco harbor. She is 158 ft. over all, 24 ft. beam and 12 ft. deep. The hull is built of pine, the frames spaced 25 in., sides 8 in., ceiling 3 in. on floors, 6 in. at bilge and 4 in. above bilge. Her planking is 3½ in. thick. The tug is equipped with one Babcock & Wilcox boiler with three furnaces arranged for burning oil fuel. The fuel oil tank has a 4,000 gallon capacity, with both hand and steam steering gear and is lighted throughout with electricity.

The Fore River Ship & Engine Co. is building two oil barges for the Standard Oil Co. and is also at work upon submarine boats.



## SCOTCH SHIPPING LETTER.

Glasgow, Aug. 4.—July is one of the duller months of the year and the new orders booked are neither numerous nor important. Caird & Co., Greenock, have received an order from the P. & O. Co. for a vessel measuring about 7,500 tons; Connell & Co. have booked a boat of 7,100 tons deadweight capacity for a Dundee firm; the Glasgow Trawling Co., Ltd., has ordered three steamers from Mackie & Thomson; Bow, McLachlan & Co. are to build a small cruiser of 400 tons for the admiralty and two vessels for Liebig's company; A Port-Glasgow firm has received a contract for a big vessel. That is all, and the prospects of Clyde ship building have not improved during the holiday month.

At a meeting a few days ago of the Local Marine Board Mr. R. G. McMurchy, chief officer of the Glasgow steamer *Miramar*, was presented with a binocular glass awarded to him by the government of the United States for services rendered in the rescue of the crew of the American schooner *Magic* in Chesapeake Bay on June 25, 1902. Mr. Nathaniel Dunlop of the Allan Line presided and made the presentation. He said the Board of Trade had directed that board to make the presentation on behalf of the American government. Mr. McMurchy had taken command of the crew which volunteered to try and effect a rescue and although there was some sea on due to the high wind which had capsized the schooner he was fortunate in bringing his boat alongside the schooner and saving the captain, his wife, and two of the crew. The board was always proud to mark that British sailors were ever ready at whatever personal risk it might be to proceed to the assistance of those in peril, and it did not need the stimulus of reward to make them ready to perform such humane duty. It was also gratifying to find that such services did not pass unnoticed by the governments whose subjects were the object of rescue, and he thought it was becoming on their part to bear testimony to the gratitude they felt towards the United States government in placing in their hands this token of their appreciation of Mr. McMurchy's services. Mr. McMurchy in returning thanks said it was only the duty of British seamen to assist those in peril and rescue humanity whenever occasion arose.

At the general meeting of the shareholders of the Anchor Line Mr. Richard Henderson, the chairman, said the period covered by the last financial year, ending April 30, might safely be characterized generally as one of the very worst in the matter of freights that shipping had passed through in the recollection of the directors, and even up to the present date there were few, if any, signs of improvement. Fortunately for them, whose business was not wholly one of cargo, there was a fairly large passenger movement last year, and they were able to take the fullest advantage of this in all their trade. They were largely indebted to that for the comparatively satisfactory state of affairs they now presented. In fact they carried more passengers in all directions last year than they ever did in the history of the line. The freight market everywhere remained more or less stagnant, especially in the United States, where they appeared to require more and more goods every year for home needs and could evidently spare less for export. Cotton and grain crops were promising well, and should give them some relief later on in the year. In some ports in India there was a greater volume of cargo moving, but there was a lack of that vitality necessary to produce any very marked improvement in the freight market, as yet. With regard to passengers, there were not the same numbers moving westwards, either from Great Britain or Italy, as there were last year, largely due to dullness in American trade centers resulting from temporary over-production. There were almost as many people coming

from America this year as there were going to that country. All their vessels were doing their particular work satisfactorily.

The postmaster general will, on Oct. 1, be ready to receive tenders for the conveyance of mails once a fortnight from July 1, 1905, between a port in the United Kingdom and the West Indies. The West India service consists of a main line to and from Barbadoes, Trinidad, Jamaica and Colon, and branch lines between Barbadoes and Demerara, Trinidad, the Windward and Leeward islands. No contract will be made with any firm, the majority of the members of which are not British subjects, or with any company which has not a majority of British subjects upon its board of directors. No tender will be received after Oct. 1.

More turbine projects. The London, Brighton and South Coast Railway Co. have invited tenders for the construction of a turbine steamer for the New Haven and Dieppe service. The vessel is to be ready for next year's summer season. The South-Eastern & Chatham Railway company's managing committee are so satisfied with the success of the turbine steamer, *The Queen*, that they have decided to replace the paddle steamers *Victoria*, *Princess of Wales* and *Mabel Grace*, by two new passenger turbine steamers. They have ordered a new twin-screw cargo steamer to replace the *Chatham*, which has been for over thirty years in the service.

A large number of marine insurance orders involving substantial sums have been received from the United States. American business in every description of maritime insurance has developed of late years in a remarkable manner, as London offers a cheaper market than can be found elsewhere. A large proportion of the business which finds its way over here comprises fleets of merchant steamers engaged in the Great Lakes and coastwise trade, but a considerable item is the insurance of warships under construction in American yards for the United States navy. Our market has had an interest in almost all of the most important battleships and cruisers now building or built for the United States government during the last decade. The new battleship *Louisiana*, now under construction by the Newport News Ship Building & Dry Dock Co. has just been insured here for £600,000. This insurance does not include the value of guns and armament but covers fire, launching risks and trial trips for a period of two years, or until the vessel on completion is delivered to the United States naval department.

Underwriters are interested in the safe arrival at Yokohama of the Pacific Mail Steamship Co.'s liner *Korea*. This steamer, which is valued at £250,000, and insured in London, left San Francisco on July 12 for Japan with a general cargo estimated at £130,000 value, exclusive of one million dollars in specie. As there was uneasiness about the Vladivostok squadron several underwriters on the cargo reinsured their lines at 5 guineas per cent. Another large American steamer, the *Shawmut*, also bound for Yokohama, left Tacoma July 10 and sailed from Port Townsend seven days later, with a valuable miscellaneous cargo. The danger of meeting the Russian gunboats caused extra rates to be paid on her for re-insurances. The *Shawmut*, which belonged to the Boston Steamship Co., is insured in Britain for £144,000, and large lines on her cargo were placed at Lloyd's against marine perils and war risks. The market for marine war risks still shows much activity and rates are ruling high for ships and cargoes for Eastern ports, and even steamers taking the Cape route are not exempt from the increased charge for war insurance. A cargo of steel work for Japan by a British steamer which, before the Malacca and Allanton seizures could be covered for a nominal rate, has been placed against war risk only at 1 per cent.

### TURBINES FOR SCOUT SHIPS.

The navy department is preparing plans for three scout ships authorized by the last congress. It can now be definitely announced that two of these ships will be equipped with turbine engines. The bureau of steam engineering has been quite deliberate in reaching this conclusion but has now made up its mind as the following letter to the Review from Rear-Admiral Charles W. Rae, engineer-in-chief of the navy department, shows:

"The plans of the scout ships are not yet in a state of sufficient development to enable a positive description of their machinery installations, but it may, at this time, be generally stated that plans are being prepared for reciprocating engines in one of the three ships, the other two to be equipped with turbines which probably will be chosen from different types. It is likely that the transmission of the power in the turbines will be arranged for on two or four shafts, to revolve at about 350 revolutions per minute in the former case and about 475 in the latter. There will only be one propeller on each shaft.

"The water-tube boilers are being designed for 250 lbs. steam pressure, which will be used by the reciprocating engines, the turbines to be supplied at the rate most suitable for the particular type installed.

"Superheating of the steam will probably not be specified (although its advantage in connection with steam turbines is well recognized), it seemingly being impossible to obtain suitable superheaters without excessive complications and increased weight, which in this instance is particularly undesirable.

"The condensing apparatus with the turbine installations is figured on a basis of 50 per cent increase in comparison with the reciprocating engine outfit, but nevertheless the bureau expects the total weight of, as well as the space occupied by, the turbine installations to be well within the limits allowed for in the reciprocating engine arrangement."

### FORESEES PROSPERITY IN STEEL.

Mr. Chas. M. Schwab, who has recently returned from Europe where he made an inspection of the Krupp works at Essen, has given out an interview of an extremely optimistic character. He says that there never was a brighter prospect for unexampled prosperity in the steel business than just now. Following is a summary of the interview:

"The gradual improvement in business noticeable at present will reveal a material advance after the presidential election. Next spring I look for the beginning of a period of prosperity such as we have never before experienced. I am convinced that it will be even better than the record period of a few years ago. Within ten years the consumption of steel in the United States will be above 20,000,000 tons. That will be greater than the combined capacities of all the steel plants of the United States. Just figure out what that will mean. With its enormous possessions of the highest grade iron ores and complete control of the known ore deposits of the world, who else besides the United States Steel Corporation would be able to reap the benefit from the future prosperity of this country? I have already planned for the expenditure of many millions in the enlargement of the facilities and capacity of the ship building and other departments of the reorganized Bethlehem company. That will be done within the next year. In 1878 and 1879, we considered the production of steel to be at its zenith. It was then but 1,000,000 tons a year. Our country is too great and strong to check. It is bound to grow rapidly.

"The condition of the steel business is not bad at present. There has been a curtailment of demand. That is natural in a presidential year. The people have been frightened and will

wait until after the election before they begin to make investments. Next spring I look for this country to start off on a period of prosperity such as we have never seen before. It will surpass even those years of the recent past which have been considered record periods. The steel business has not been so bad this last year as it was in previous years.

"As I have said, when I started in the steel business in 1878 or 1879, the steel tonnage of the country was just 1,000,000. Ten years after 1897 the tonnage of steel had grown to 7,000,000 tons. We then thought it was at the top. But ten years after that it had reached from 12,500,000 to 14,000,000 tons. The consumption at present is from 15,000,000 tons to 16,000,000 tons a year. Within ten years it will have gone above 20,000,000 tons a year. These figures are approximate. It can be seen that the constant growth of the country, the enormous and steady increase in population and the continual utilization of steel for new purposes have brought about the virtual doubling of steel tonnage every ten years. Figuring on that basis, from my long experience in the steel business and from my knowledge of the situation, the steel tonnage within ten years will be greater than all the mills at present can supply, and I have not made any mistakes in the past. I propose to devote my entire time and energies to the development of the new Bethlehem Steel Company. We propose to spend many millions within the next year in the expansion of our plants. Reports that I intend to establish mills in the Pittsburg district are not true. I shall never work in antagonism to the United States Steel Corporation. We are in perfect harmony now, and if I should enter the Pittsburg district to make steel that would be antagonistic. My home will be in New York, and I shall devote my time and energies toward the expansion and success of the Bethlehem company."

### NEW IDEA IN TURBINE STEAMER.

The latest idea in the way of a turbine vessel was recently launched from the roof of a four-story building at No. 221 Mercer street, New York. The inventor of the new turbine is a young Cornell graduate, Thomas B. Taylor. This creation will be tested shortly on the Hudson. In the Taylor boat the application of the turbine idea instead of applying the power from the engines to the end of the shaft is transferred from the engines by gearing located about the middle of the shafts. The shaft gearing and propellers are inclosed in a tube which extends about two-thirds the length of the keel and is bolted to it. According to Mr. Taylor the result of this arrangement is that the driving force produced by the propeller blades is concentrated within this confined space, and not dissipated in all directions as in the case of the ordinary propeller. The new turbine boat is 30 ft. long, 5 ft. beam and draws 3 ft. of water. The hull is made of heavy oak planking. The tube that incloses the shaft is between the hull and the keel, beginning at a point 5 ft. abaft the bow and ending about the same distance forward of the stern. The inside diameter of the tube is 15 in., the propeller blades being 6 in. long and having a pitch of something over 12 in. The shaft runs the entire length of the tube and is connected with the engine directly in the center, on either side being four 2-blade propellers at equal intervals. Mr. Taylor says that in his boat the water rushing in through the bow opening will be driven back by the propellers in a dense compact volume which will result in a greatly increased power over that possible with an unclosed screw. He says that the principle can be applied to the largest steamships and that its adoption will make them safer and speedier and produce less vibration than any existing scheme of marine propulsion.

Capt. James W. Hawley, in the Reed yard, Bath, Me., will soon begin work on a 700-ton four-masted schooner.

## SUMMARY OF NAVAL CONSTRUCTION.

The summary of naval construction issued by the navy department shows the Connecticut building at the New York navy yard to be 44 per cent completed and her sister ship, the Louisiana, building at the Newport News Co.'s yard, to be 50 per cent completed. The Louisiana will be launched next week Saturday, and the Connecticut will be launched during the latter part of September. The summary, which is as follows, shows that excellent progress is being made upon the various war ships:

		Degree of completion, per cent.	
		July 1, '04.	Aug. 1, '04.
<b>Battleships.</b>			
Ohio .....	Union Iron Works.	96	97
Virginia .....	Newport News Co.	62.4	63.7
Nebraska .....	Moran Bros. Co.	51	54.3
Georgia .....	Bath Iron Works.	56.42	59.3
New Jersey .....	Fore River S. & E. B. Co.	61.6	63.8
Rhode Island .....	Fore River S. & E. B. Co.	64.1	66.1
Connecticut .....	Navy Yard, New York.	44.82	47.3
Louisiana .....	Newport News Co.	50.79	52.59
Vermont .....	Fore River S. & E. B. Co.	10.9	13.4
Kansas .....	New York S. B. Co.	13.2	17.7
Minnesota .....	Newport News Co.	34.27	37.56
Mississippi .....	Wm. Cramp & Sons.	4.61	6.65
Idaho .....	Wm. Cramp & Sons.	4.68	6.50
<b>Armored Cruisers.</b>			
Pennsylvania .....	Wm. Cramp & Sons.	82.7	84.2
West Virginia .....	Newport News Co.	87.58	89.32
California .....	Union Iron Works.	61	62
Colorado .....	Wm. Cramp & Sons.	86.4	89.2
Maryland .....	Newport News Co.	85.07	86.87
South Dakota .....	Union Iron Works.	59	59
Tennessee .....	Wm. Cramp & Sons.	38.5	42.45
Washington .....	New York S. B. Co.	34.4	38
<b>Protected Cruisers.</b>			
Chattanooga .....	Lewis Nixon.	88.94	91.9
Galveston .....	Wm. R. Trigg Co.	84	87
St. Louis .....	Neafie & Levy Co.	43	44.6
Milwaukee .....	Union Iron Works.	53	54
Charleston .....	Newport News Co.	76.3	79.5
<b>Gunboats.</b>			
Dubuque .....	Gas Engine & Power Co.	47.7	52.7
Paducah .....	Gas Engine & Power Co.	38.7	45.2
<b>Training Ships.</b>			
Cumberland .....	Navy Yard, Boston.	49	57
Intrepid .....	Navy Yard, Mare Island.	33.8	43.4
<b>Training Brig.</b>			
Boxer .....	Navy Yard, Portsmouth.	55	65
<b>Torpedo Boats.</b>			
Stringham .....	Harlan & Holl'swith Co.	98	99
Goldsbrough .....	Wolff & Zwicker.	99	99
Blakely .....	Geo. Lawley & Son.	99	99
Nicholson .....	Lewis Nixon.	99	99
O'Brien .....	Lewis Nixon.	98	98

## NEW LIGHTHOUSE AND FOG SIGNAL STATION.

A lighthouse and fog signal station are to be built on Mile Rock at the entrance to the harbor of San Francisco. At the time of the disaster to the steamer Rio Janeiro, it was supposed by many people that the ill-fated vessel had struck upon Mile Rock, but it is now believed that she foundered off Fort Point, in a hole more than 60 fathoms deep, and that the disaster would not have occurred had the pilot been able to rectify his position by means of a signal on Mile Rock.

Mile Rock is about  $1\frac{1}{2}$  miles inside a line joining the outer heads of San Francisco harbor, three-eighths of a mile from

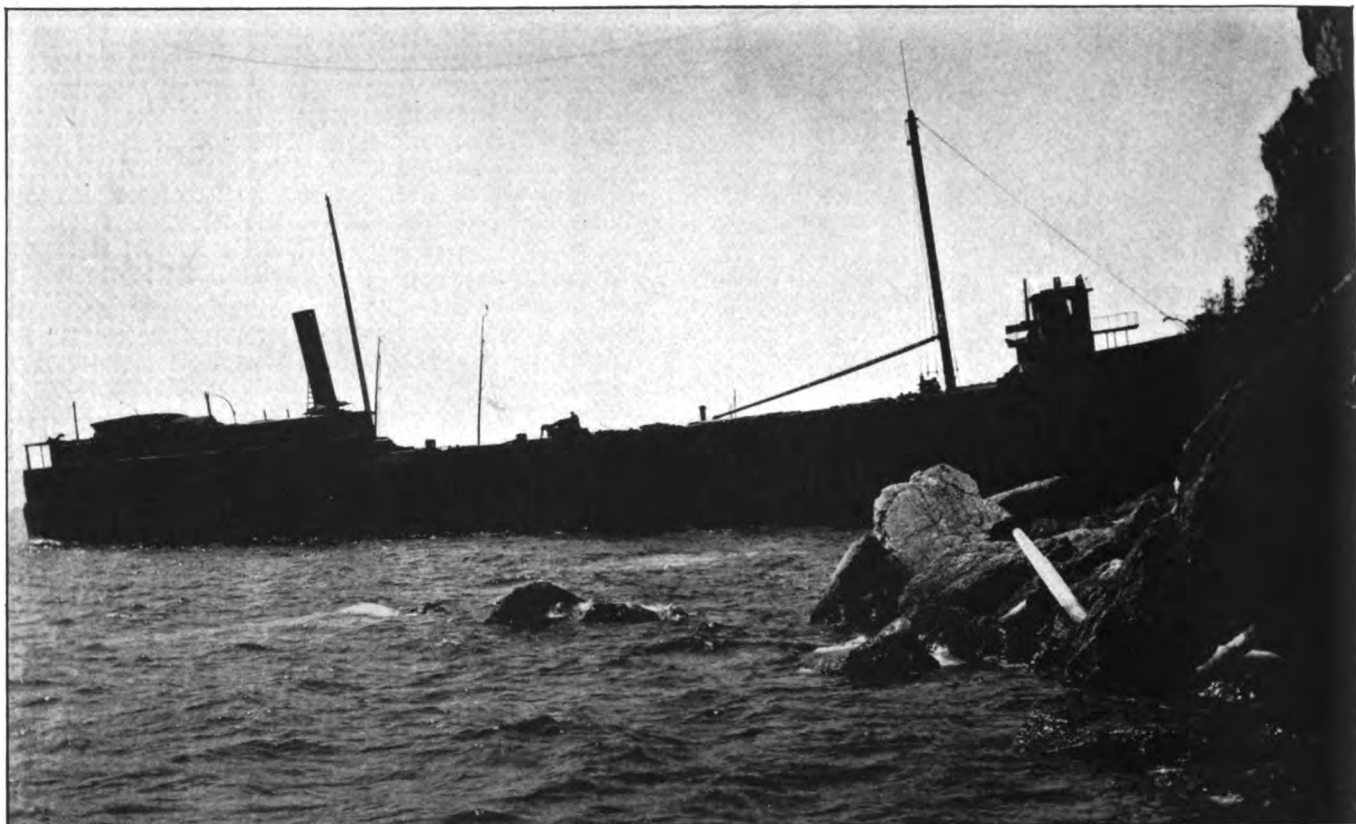
the south shore and one mile from the Seal rocks at Point Lobos. It rises nearly vertically out of water 40 to 50 ft. deep and stands 16 ft. above mean low water. The strong winds that blow during the afternoons in summer cover it with spray and in times of storm it is buried under the high waves. It has hitherto been considered a menace to navigation, but, when the proposed lighthouse is erected, it will be a valuable aid to the mariner in foggy weather, which is very prevalent on this part of the Californian coast, especially in summer. The area of Mile Rock at mean high water is about 1,000 sq. ft., but the proposed structure will cover only about 700 sq. ft. The structure will have a concrete base, 34 ft. high, plated with iron, which is intended chiefly to protect the concrete while it is being put in position. The base will be an ellipse, with the sides somewhat elongated and flattened. This shape utilizes the largest practical area of the rock at high water and offers the best resistance to the waves. In the base will be a cistern, which will be filled from time to time with fresh water for the keepers. The entrance will be by landing steps leading to an oak door 4 ft. thick and mounted with bronze. There will be space in the concrete base for the storage of supplies, winding stairs of concrete leading from the base to the storeroom. The preservation of the iron plates on the concrete base is not considered important. In a few years they may corrode and be removed, leaving the solid concrete exposed.

Upon the concrete base and having the same shape will be a steel structure, containing a hoisting engine for the derrick with which supplies will be brought in and the machinery for the operation of the fog signal. The signal machinery, in accordance with the practice at well-equipped stations, will be in duplicate. As steam power requires considerable quantities of coal, the fog-whistle will be sounded by compressed air, the compressors being operated by 20-H. P. Hornsby-Skroyd oil engines. The second story of the steel superstructure will be round and will contain the kitchen and dining room of the keepers, who will cook their food on an oil stove. The next story will contain the bed rooms and common sitting room, and above will be a watchroom. At the summit will be the lens lantern, the light being a red one of the third order.

That the keepers may be able to report interesting facts to headquarters and to maintain communication with their friends, a telephone line will be laid from the rock to the shore and connected with the city lines.

The plans were prepared under the supervision of Lieut. Col. Thomas H. Handbury, lighthouse engineer of the twelfth district, and have recently been returned to San Francisco approved by the lighthouse board in Washington. As soon as the drawings have been photographed and the specifications printed, proposals for doing the work by contract will be advertised for. Two contracts will be let—one for the concrete base and the other for the steel superstructure, as these require materials and laborers of different kinds. The steel work will be set up in the contractor's shop and marked so that the task of assembling the parts on the concrete base will be a simple one. If the United States engineer secures good contractors, it is believed that the lighthouse may be completed in the coming fall. It will increase the safety of navigation of the Golden Gate and will be a picturesque object to the eyes of the traveler entering the port of San Francisco.

It seems strange to employ steel in the construction of a lighthouse, which is so greatly exposed to the corroding influence of salt water, but every part of the metal work will be so arranged that rust may readily be cleaned off by a sand blast. On reaching the bare metal, preservative paint will be applied. The entire structure will be painted white outside, because white shows better in a fog than any other color; and inside, because the lighthouse inspector is then easily able to detect any dirt due to the neglect of the keepers.



PLIGHT OF THE FOREST CITY.

The steam barge *Forest City* last month ran full speed during a heavy fog on Bear's Rump island, Georgian bay. The position of the barge, with her forward part rammed into the boulders and bushes beneath the wall of a cliff 300 ft. high, and with twenty fathoms of water at her stern, shows strikingly the characteristics of the waters, islands and shores of Georgian bay.

[Photo by H. E. McDonald, *Wiarpon, Ont.*

#### WORDS OF COMMENDATION.

The following letter was received from a naval officer at Washington and of course requires no comment:

"Enclosed is my renewal for the Review, \$3.00. In all truth, no nautically inclined American can well get along without this journal. Your efforts in making it the foremost marine paper of the country are most heartily appreciated, not only by myself but the other many readers throughout the navy department. Not only do all appreciate your efforts to make it the best publication, but recognize that you are acting from purposes of high patriotism in advancing, in season and out, the development of the American marine. Your labors and your efforts on behalf of the fast waning American shipping, are in extent greater than all other publications and forces combined, and we are sure that every thinking man hopes that success will reward the cause, and also advance the interests of your publication. By the way—can you not send me a dozen or more of those 'Marine Tracts' which you enclosed with the subscription? Naval officers to whom the original were shown evinced most hearty interest, many of them stating that the importance of the subject should not be neglected by any man who loved salt water, for a navy and the commerce protected by a navy necessarily go hand in hand."

#### UPBUILDING OUR MERCHANT MARINE.

Editor *Marine Review*: I thank you for your invitation to contribute an article upon the subject of American shipping and of the valuable hints therein. I have no doubt that our shipping should always have been helped or protected. In fact, I understand, our ship builders were formerly exempt from tax, which was a substantial form of protection and gave that industry considerable life and activity while the

tax exemption was in vogue. I have thought that a substantial duty allowance on all transatlantic shipments on American-built ships would be a simple and effective remedy for our present depression in what ought to be one of our great industries. Some other time I should like to go more deeply into the subject with you, but time fails now.

Alton, N. H.

W. ROCKWELL CLOUGH.

#### LIGHTER RESCUE INSPECTED.

The steel lighter *Rescue*, built by the American Ship Building Co. for the Great Lakes Towing Co. was inspected this week by the vessel interests of Cleveland upon invitation. The *Rescue* has a cargo capacity of 1,700 tons and is equipped with a mammoth 10-ton new type steam rotating and traveling derrick with clam shell buckets of 3 tons capacity. The towing company represents that the *Rescue* is in every detail the most complete craft of its kind in the world. It was the success of the steel lighter *T. F. Newman* that caused the company to add another lighter to its equipment before the needs of the business really justified it. The new lighter is to be stationed in St. Mary's river, but unlike the *Newman*, which is intended exclusively for river service, has been made sufficiently seaworthy to work in the open lake.

Control of the coastwise wireless telegraph stations now operated by the government has been awarded to the navy by the president. An exception in favor of the army is made, however, in case of those coastwise stations in connection with the various army stations along the coasts.

The cruiser *Albany* will be repaired at the Bremerton navy yard at a cost of \$180,000.



## A PRIVATE HYDROGRAPHIC SURVEY.

Editor Marine Review: The object of this survey was not like most hydrographic surveys, in the interest of marine and shipping but was a private affair in the interest of a syndicate, its object being to determine the suitability of a small harbor on the coast of the Gulf St. Lawrence for canning and preserving certain kinds of fish on a somewhat important scale. To this end the writer made a complete survey of the locality in order to fix the position of deep and shallow points, the nature of the coast line, the soundings and depths of water along shore, the particular topography in and around the fishing station, the margins between high and low water as well as the points of extreme high water at times of great storms and very high tides, best points for erecting plant, roads leading to the place, or accessibility, boundaries of the adjacent lands and its owners, and in particular the nature of the coast line and the suitability of the harbor or cove as a shelter for the small craft used in the pursuit of the fisheries. It is be-

lieved that the map or chart here reproduced gives this information by means of conventional signs usually used in hydrographic and topographic surveying, and that very little need be said in the way of text.

The topographical features were all obtained with a sextant and tape, if we except a small pocket compass, used for the courses of lines, roads and boundaries and the direction of the meridian. The times of high water were obtained from Bliss' New York Nautical Almanac and proved wonderfully correct. The soundings at low water were obtained by taking a number of small anchors with short line and flagstaff buoy attached in a small boat and rowing in and out until the depth of one fathom, two fathoms, three fathoms, etc., respectively, were found by soundings and an anchor and buoy dropped exactly over this spot. Rows of buoys were dropped at each fathom. Then with the sextant in the boat, situated directly over each buoy, observations were taken to three signals on shore, noting the two angles. This is the trilinear method, or the "problem of the three points," and is the nicest method of determining the position of a point, requiring no base line on the water. The geometrical exposition of the problem is quite simple and convincing.

As it was quite impossible to get all the soundings at one period of low water, the work was continued, and the small reduction to low water calculated in Bowditch's method, that is by drawing a semi-circle with a radius equal to half the number of feet of rise of tide from low to high water, and dividing by a line of chords corresponding to 27 deg. 42 min., which being laid off from the hour and minute of low water

will reach to 6 h., etc. Perpendiculars to the diameter are then laid off from each hour and the number of feet corresponding marked on the diameter of the semi-circle is the number of feet above low water as is shown in the figures.

## KEY AND EXPLANATION TO DRAWING.

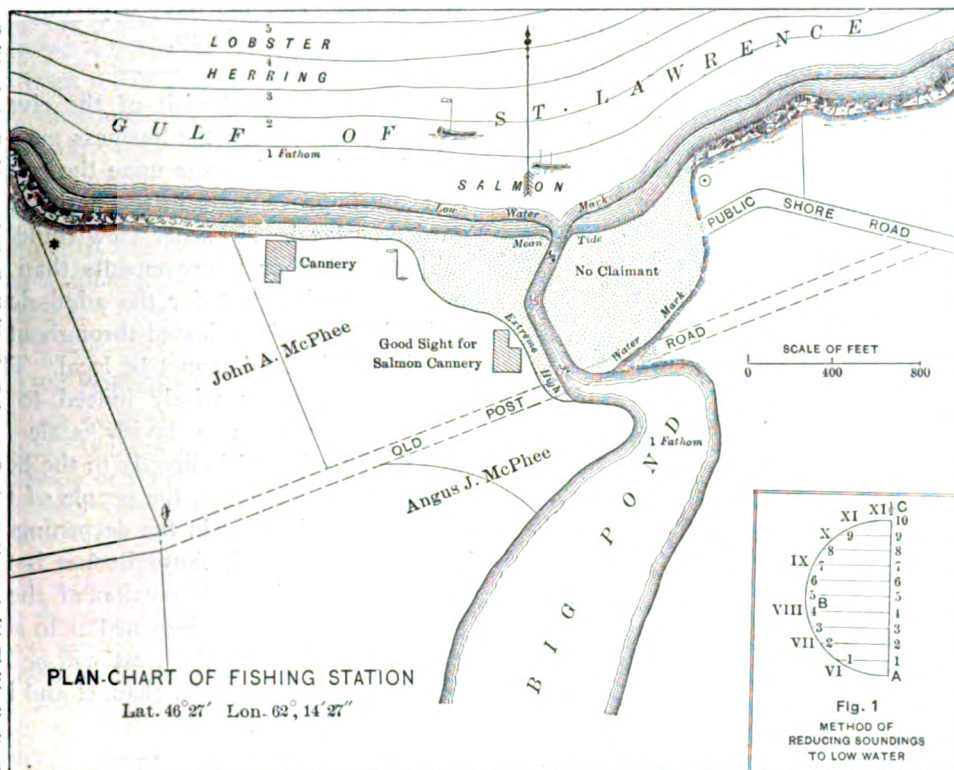
Suppose the whole vertical rise of tide from low to high water to be 10 ft., the time of low water 5 h. A. M., and the time of high water 11 h. 30 m. A. M.; required the allowance to be made on an observation taken at 8 h. A. M.? Draw the line AC and make it equal to the whole rise of tide 10 ft., taken from any scale, and divide the line into equal parts representing feet, at the points 1, 2, 3, etc., to 10, the mark 10, corresponding to the whole rise of tide, being at the point C, and through these points draw lines 1, 1; 2, 2; 3, 3, etc., perpendicular to AC, to meet the circumference of a circle drawn on the diameter AC.

Divide the semi-circumference ABC of that circle into a number of equal parts representing the number of hours elapsed from low to high water, which in this case is 6½ h., the hour of low water being marked at A, and that of high water at C, the intermediate hours being marked in succession as in the figure; then any hour being found on the arch, the number of the line drawn perpendicular to AC, and passing through the hour will represent the number of feet to be subtracted from a sounding taken at that time to reduce that sounding to low water. Thus the number of feet corresponding to 8 h. is between 4 and 5 because the mark, 8 h. falls between the lines marked 4 and 5 so that the reduction is between 4 and 5 ft., on soundings taken at 8 h. A. M. to reduce them to low water on the day of observation. The division of the semi-circle may be made by means of a line of chords. The number of degrees corresponding to one hour being found by saying as the whole elapsed time from low to high water, 6½ h. is to 180 so is 1 h. to the arch corresponding to 1 h. 27 deg. 42 m., which being taken from a line of chords and laid off from 5 h. will reach to 6 h., etc.

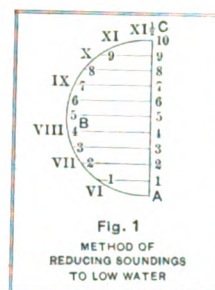
J. A. MACDONALD.

Hermanville, P. E. I.

United States Assistant Engineer Blunt says that the statements made to the effect that there are bars in Toledo harbor are erroneous. He says the channel will everywhere accommodate any vessel that can cross Lime Kiln crossing and that every vessel that has grounded in Toledo harbor this year has been out of the channel.



THE RESULTANT CHART FOR THE FISHING STATION.



MARINE REVIEW





DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED  
OR ASSOCIATED WITH MARINE MATTERS  
ON THE FACE OF THE EARTH.

Published every Thursday by

**The Penton Publishing Company,**  
**CLEVELAND, OHIO.**

CLEVELAND:  
CHICAGO:  
DETROIT:  
NEW YORK:

WADE BUILDING.  
MONADNOCK BUILDING.  
HAMMOND BUILDING.  
150 NASSAU STREET.

*Correspondence on Marine Engineering, Ship Building and  
Shipping Subjects Solicited.*

Subscription, \$3.00 per annum. To Foreign Countries, \$4.50.  
Subscribers can have addresses changed at will.

The Cleveland News Co. will supply the trade with the MARINE REVIEW  
through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, Ohio, as  
Second Class Matter.

AUGUST 18, 1904.

The Merchant Marine commission which has concluded a most successful visit to the Pacific coast has still one tour to make and that is to the cities of the south Atlantic coast. At the conclusion of this latter trip the commission will meet in Washington to form its report to be presented to congress at the opening of its session, Dec. 1. The reception which was offered to the committee on the Pacific coast was striking and the sentiment was found to be unanimous that something should be done to upbuild the American merchant marine in the foreign trade. Everywhere this commission has gone big, earnest, disinterested men have appeared before it and declared that the decline of American shipping in the foreign trade should be arrested if an ultimate calamity is to be averted. A nation such as this with millions upon millions of products to go abroad cannot be altogether dependent upon foreign ships—and that is certainly what the United States is today. It carries less than 9 per cent of its foreign trade in its own ships. It is subject at any time to having the other 91 per cent stranded. Coincident with that would come a national panic, the like of which has never been experienced. It therefore behooves the nation to amend the present conditions in order that an American ship may thrive upon the seas.

An important announcement is made by Rear Admiral Charles W. Rae in the present issue of the

Marine Review to the effect that two of the scout ships now being designed for the navy department are to be equipped with turbines. The third scout ship will be equipped with reciprocating engines and the two turbine ships will have turbines of different makes, so that the comparative data which will be obtained from them will be of exceeding value. The attention of engineers is directed to the communication of the engineer-in-chief of the navy department which is to be found in another column.

During the recent visit of the rivers and harbors committee to Boston the business men of Boston took especial pains to impress upon the committee the fact that any improvements in the harbor could not be regarded as local. No saner view could be taken of the subject of harbor improvements than this. The improvement of a port for the admission of commerce which is to be disseminated throughout the length and breadth of the land cannot be local. The general government does very wisely indeed to project harbor improvements upon a lavish scale because it redounds directly and indirectly to the benefit of the entire people. Moreover, the people of the middle west have a direct interest in the deepening of the channels of Boston's harbor because Boston is the natural seaport for a considerable portion of the western trade. If the channels are so deepened as to admit the largest steamers the trade of the west will be benefited. Boston is striving for a 35-ft. channel and it is to be hoped that she will get it.

One has only to look back a dozen years to discover that the average cargo carried on the great lakes at that time was 2,500 tons. The capacity of ships hovered about this figure for a considerable length of time and it was with great deliberation that it was increased. The era of big ships on the lakes may now be said, however, to be fairly established. Mr. G. A. Tomlinson of Duluth, one of the most progressive of the younger element among ship owners, has just given a contract to the American Ship Building Co. for a vessel exceeding in dimensions the Sahara which came out this summer. As usual there is no standing still and the new steamer will be something of a departure from the Sahara. Like the Wolvin she will have a hopper bottom but, unlike the Wolvin, the sides of her cargo hold will be vertical instead of sloping. She will be 500 ft. in length. Inquiries among vesselmen seem to establish 500 ft. as the favorite length for the modern lake carrier. The new vessel may be regarded indeed as a modification of the Sahara and the Wolvin.

The placing of such a contract shows how high the new average cargo is going to be. In 1890 the Matoa of 3,000 tons was the largest cargo carrier on the lakes and the average cargo for three or four years thereafter was 2,500 tons. Today the average cargo

may be said to be roundly 5,000 tons, but it is clear that the average of the new fleet which from now on is to come into being will be 8,500 tons or more. The tendency on the great lakes, as well as on the ocean, is towards greater and greater ships.

And, indeed, now is the time to give orders for ships, for it is clear that the price of steel, as fixed by the steel pool, has been broken—that is, the indications are fairly conclusive that lower prices have been obtained by considerable buyers during the past two or three weeks. There has been much criticism of late months of the dumping of steel abroad at much lower prices than those which obtain at the point of manufacture, and the result has been a break at home. There is no doubt whatever but that a reduction in the price of steel is the best thing that can happen to the associated industries dependent upon it, one of the leaders of which is ship building.

#### CONTRACT LET FOR GREAT FREIGHTER.

While in Chicago this week Mr. J. C. Wallace, general manager of the American Ship Building Co., closed a contract with Mr. G. A. Tomlinson of Duluth for the construction of a freight steamer for next season's delivery, to be somewhat larger than the Sahara. The new steamer will be 500 ft. over all, 480 ft. keel, 52 ft. beam and 30 ft. deep; or, in other words, she will be 6 ft. longer and 1 ft. deeper than the Sahara, which is the second largest cargo carrier on the great lakes. The new steamer will be equipped with triple-expansion engines, 22½, 36 and 60 inch cylinder diameters, with 40-inch stroke, supplied with steam from two Scotch boilers 13 ft. 9 in. in diameter by 11½ ft. long, fitted with Ellis & Eaves draft. She will have twenty-eight hatches and will be fitted with a hopper cargo hold like the Wolvin—but, unlike the Wolvin, it will have straight instead of sloping sides. She is intended to carry 9,000 tons of ore. She will be built at the Lorain yard and work will be begun upon her as soon as the material can be assembled. She is promised for delivery April 15, 1905. No name has, of course, yet been announced for this steamer, but, like all the new vessels of the Tomlinson fleet, it will probably begin with S and end with A.

This is the first contract that has been given to a ship yard on the great lakes for a cargo steamer for some little time. Indeed, ship building on the great lakes has been at a lower ebb than it has been for years past, the volume of trade considered. However, it is confidently expected that more orders will follow in the course of a few weeks. Tentative negotiations are under way from a variety of sources, and it is likely that the great lakes fleet next year will have some splendid additions to it, especially now that the price of steel will fall to a lower rate as foreshadowed by the dissolution of the steel pool. There has been cutting for some weeks past, severely so, and the indications are fairly conclusive that plates may be got at a figure much lower than that which obtained a few months ago.

#### FREIGHT SITUATION ON THE LAKES.

The freight market continues in a state of comparative stagnation as far as vessels are concerned. The coal trade opened during the week with a little better feeling, but affording no real improvement. While the ore trade is heavy it is not sufficient to employ all the tonnage seeking cargoes, and the week was marked by a fall of 5 cents in the wild rate from the head of the lakes. Shippers have been having

trouble in keeping all the contract vessels busy owing to the light demand for ore at the furnaces. The one hopeful feature of the situation is that affairs have apparently reached bottom and any change, therefore, must be for the better. There is nothing new to report in the grain trade. It is as dull as ever.

#### CHICAGO GRAIN REPORT.

Chicago, Ill., Aug. 16.—The period from last report has been one of fairly active chartering on the basis of 1¼ cents to Buffalo for corn, with unchanged rates to Montreal at 3 cents for corn, all water routing meeting with moderate shipping response. While the general movement from country points toward Chicago elevators holds encouraging, the cash demand in both New England and export trade reflects little in accord with the present high market values of the grain, and the outset of the present week notes a weaker tendency, through somewhat an excess of vessels under free offering at 1¼ cents, Buffalo basis.

Receipts of the week noted were about 805,000 bu. of wheat, 1,420,000 bu. of corn, and slightly upward of 3,000,000 bu. oats, with shipments—as will be noted below—quite an improvement over last week's figures. Of these shipments noted "this week" distribution is as follows: Via all rail lines, 220,000 bu. wheat, of corn 1,475,000 and of oats 1,000,000 bu.; via lake to Buffalo and other American points, of wheat 290,000 bu., of corn 1,600,000 bu. and oats 100,000 bu.; and to Canadian points via lake, about 330,000 bu. corn.

##### Lake and Rail Shipments—

	This week.	Last week.	Same week last year.
Wheat .....	51,891	484,074	269,135
Corn .....	2,080,500	1,661,140	1,456,428
Oats .....	1,107,135	523,509	1,310,392
Rye .....	6,800	14,640	4,325
Totals.....	3,255,506	2,683,363	3,040,280

	Shipments since Jan. 1, 1904.	Same time last year.
Wheat .....	8,622,837	12,496,187
Corn .....	40,661,464	50,100,580
Oats .....	26,365,979	40,618,004
Rye .....	824,577	2,167,092
Totals.....	76,474,857	105,383,372

##### Stocks of grain in elevators—

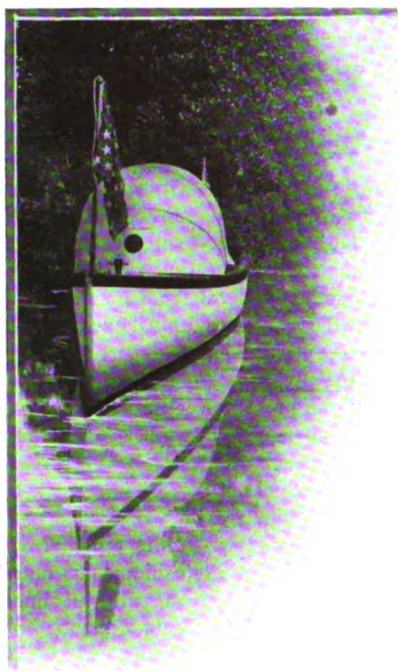
	This week.	Last week.	Same week last year.
Wheat .....	2,492,000	2,300,000	4,040,000
Corn .....	4,175,000	4,808,000	5,842,000
Oats .....	2,480,000	1,001,000	4,667,000
Rye .....	147,000	144,000	375,000
Totals.....	9,294,000	8,493,000	15,824,000

Bids will be opened by the navy department within the next six weeks for the construction of the new 16,000-ton battleship New Hampshire and the armored cruisers North Carolina and Montana. At the same time contracts for the new scout cruisers Chester, Salem and Birmingham will be given out. The two new colliers, Erie and Ontario, authorized in the last naval appropriation bill will be built by the government, one at the Brooklyn navy yard and the other at the Mare Island navy yard.

The Maryland Steel Co., Sparrow's Point, Maryland, has secured the contract to build five steel double-ended screw ferry boats to be built by the city of New York for the Staten Island ferry.



### MOTOR BOATS NUMEROUS BUT ENTRIES FEW.



HOODED LAUNCH OF MATTHEWS BOAT CO.

were willing to compete and thus add some little enthusiasm to the sport. The cabin and cruising launches taking part have been few, giving way to the auto or motor boat. Statements have from time to time been made by some very prominent yachtsmen in the east that this season has more or less been one for the demonstrating of the qualities and speed of boats by the various manufacturers or builders and have held aloof awaiting developments before either purchasing or trying their own boats. It is the general opinion that next season will see numerous events and that entries will be by no means small, as many prominent yacht clubs throughout the country will be possessed of many auto or motor boats in time for next season's racing events.

The American Power Boat Association, composed of a great many representatives of numerous yacht clubs was organized for the sole purpose of fostering the motor boat sport, the improvement of their design and power construction. Nearly all, if not all, of the noteworthy events thus far this season has been under their rules and time allowances, which were carefully compiled so that all classes of motor boats including the auto, motor, cabin, or cruising launch, could take part and have the same chances of winning. But the cabin and cruising launches taking part in events have been very few, they giving way to the auto or speedy motor

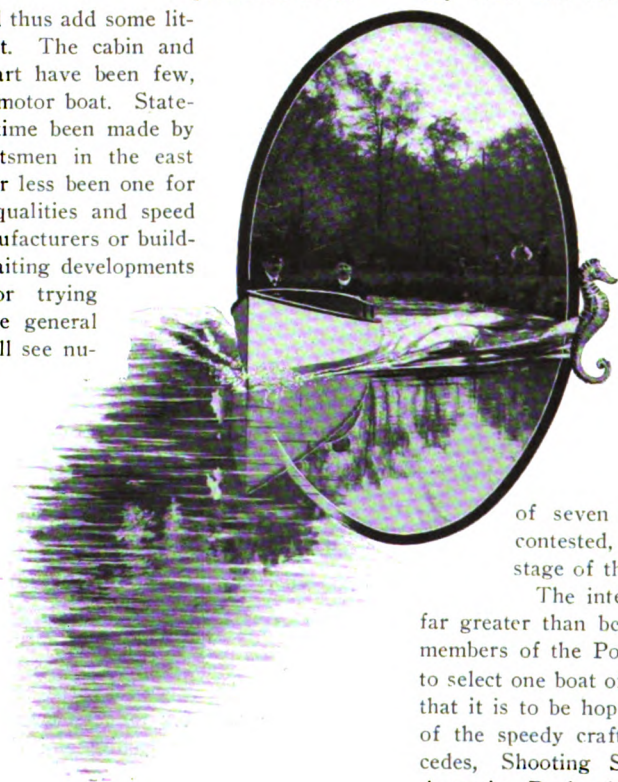
boat. A great many did not wish to compete against such fast boats as the Challenger, Standard, Vingt et Un, Water Lily, Shooting Star, Alert and numerous others that have appeared from time to time and the reason given was simply that they did not feel as though they stood any chances of winning a race while in reality, taking the ratings and time allowances, their chances were as good as the most speedy of auto or motor boats. How can the problem be solved? There is but one solution and that is by placing all speed boats—auto or motor—in one division, owned and operated by professionals and those owned and operated by strictly amateurs in another. If necessary have the former division hold their events during the morning and the others in the afternoon, so that the speedy auto or motor boat will not in any way interfere with boats of the cabin or cruising launch types. Another thing that has no doubt interfered with the sport to no little extent has been the injudicious way in which some manufacturers have imposed upon the sport for nothing less than advertising purposes—advertising world beaters, which have turned out to be anything but speedy craft. This has however to a great extent been eliminated.

Numerous entries have been filed with regatta committees of the various clubs holding power boat events but when the time came for the race not half or one-third of those entered have taken part. Various reasons have been expressed, one of which has been to await developments of those who would take part in an event, using the term of the racing fraternity, to get a line on the boats competing over previous performances. This is not by any means sport, neither is it helping power boat racing. No one boat that has taken part in any event this season has shown her real speed. Take for

instance the Standard. Each time she has competed she has shown more speed and the actual speed of this remarkable boat has not as yet been attained and will not until she is forced to in competition with many other speedy boats and in this respect the return of the Challenger, now in European waters, is anxiously awaited, as it is expected both these boats will meet in the coming Gold Challenge Cup series that will take place during Labor day week on the Hudson River, N. Y. city. This event should bring out many boats who are eligible to compete for this cup and while it is anxiously looked forward to yet it cannot be definitely settled upon that the entries will be numerous for out

of seven entries at the last contest but three boats contested, one of which became disabled in the early stage of the contest, leaving but two to compete.

The interest manifested in this event, however, is far greater than before and the various yacht clubs who are members of the Power Boat Association and thereby entitled to select one boat of their number to compete, are doing so, so that it is to be hoped that it will bring together the foremost of the speedy craft such as the Standard, Challenger, Mercedes, Shooting Star, Alert, Water Lily, Japansky, Flip, Autowin, Panhard II and others that might be mentioned. This contest is open to all power boats whose rating under the association shall not be less than 35 ft. and whose water line length shall not be less than 25 ft., in no case shall the rating be less than the water line length and is open to all clubs who are members of this association. The match is open to power boats of all kinds—naphtha, steam, electric and kerosene. This should prove the most interesting race of the season and if the entries are numerous and all who enter take part, will no doubt establish new figures in the matter of speed.



SPEED LAUNCH, MATTHEWS BOAT CO., BASCOM, O.





SMITH &amp; MABLEY AUTO BOAT.

## NEW YORK YACHT CLUB MOTOR BOAT RACES.

Amid the roaring of guns on arrival of the Delaware, flagship of the New York Yacht club, Commodore Frederick G. Bourne at Glen Cove, Long Island, the annual cruise of the New York Yacht club was under way. Twenty-eight steam yachts, twenty-three schooners, eleven sloops, seven auxiliaries and one yawl mustered at the rendezvous. All the vessels were in spick and span condition. Officers and crews in new toggery with new sails bent on many of the craft made a very inspiring sight. Enthusiasm ruled supreme. Commodore Bourne, assisted by Fleet Captain Commander J. D. Jerrold Kelley, U. S. N., received the numerous officers and guests on board the Delaware and predicted a very interesting and successful cruise. Considerable interest was manifested in the power boat races and while but a few competed for the very handsome trophy, the "Rendezvous cup," donated by the club, yet the races were exciting. The start was to have been made at 10:30 a. m., but owing to the fact that some of the boats were not on hand the start was delayed until 12:05 p. m. Shortly before noon Messrs. H. de B. Parsons and Frank Bowne Jones, the committee in charge of the motor boat races, put off in the tug Unique for the starting line. The course was a triangular one of  $11\frac{3}{4}$  nautical miles in length. There were only five boats to compete for the trophy and they were put in one class. As the Neon left the float for the starting line a remark was made that something extraordinary was hailing from the village of Bristol on Narragansett Bay, the home of the Herreshoff's, almost daily. Capt. Nat Herreshoff had entered his new creation, the Neon, a diminutive motor boat. The captain had been training two of his young sons at Narragansett bay in the art of motor boating for sometime and the boys handled her throughout the contest. She was entered against Miss Swift, owned by Robert Jacob; Aletes III, owned by R. C. Fischer; the Delaware, Commodore F. G. Bourne's launch, and the Suis Moi, owned by Gilbert M. Plymton. The start was a very good one, the Miss Swift and the Delaware getting away very close together and throughout the contest the race was keen between these boats. Miss Swift was the first to finish, followed by the Delaware, Aletes III, and Neon. The time was not fast and while the committee were unable to secure the exact measurements of the Neon they were quite sure she was the winner of the trophy as her time allowance must be very large taking into consideration the measurements, etc., of her competitors. Miss Swift is equipped with a Buffa-

lo motor of 26.9 H. P., L. W. length 38.9 ft.; the Sui Moi equipped with a Standard motor of 27.14 H. P., L. W. length 55.10 ft.; Aletes III, equipped with a Standard motor of 21.15 H. P., L. W. length 64 ft.; Delaware, a naphtha launch, L. W. length 50 ft.; the Neon equipped with a motor of  $4\frac{1}{2}$  H. P., L. W. length 21 ft. The summary of the race is as follows:

Glen Cove, Long Island, N. Y., Aug. 11.—N. Y. Y. C. annual cruise. Motor boat race. Course, triangular.  $11\frac{3}{4}$  nautical miles.

Open and cabin motor boats—start 12:05 p. m.:

Boat.	Owner.	Finish H. M. S.	Elapsed time H. M. S.
Miss Swift—Robert Jacob.....		1:02:10	0:57:10
Delaware—Frederick G. Bourne.....		1:04:09	0:59:09
Aletes III.—Robert C. Fischer.....		1:10:10	1:05:10
Neon—Nat. G. Herreshoff.....		1:38:27	1:33:27
Suis Moi—G. M. Plymton.....		Did not finish.	

## WITH THE MOTOR BOAT BUILDERS.

The Chase Pulley Co., Providence, R. I., has just finished an auto boat for Mr. Frank Croker of New York. Her design is by Charles F. Herreshoff, New York. The hull is 140 ft. over all, 37 ft. 6 in. on the water line, 4 ft. 8 in. draught. Power is furnished by a four-cylinder, four-cycle motor of 40 H. P.

Mr. Thomas Clapham of Roslyn, Long Island, N. Y., has just finished a 23-ft. speed launch which, as far as is known, is unlike anything yet produced. Her bottom is absolutely flat in cross-section from bow to stern. The total draught of her hull at the deepest part which is amidships is only  $3\frac{1}{2}$  in., with all equipments on board, and all her longitudinal lines are true segments of circles. Her breadth of beam amidship and at the stern is the same, namely 40 in.

H. B. Porter of Norwich, Conn., is the possessor of a very handsome and roomy launch which he is using at his summer place Fisher's Island, New York. The boat was designed by Mr. Charles Wyckoff of Clinton, Conn. She is equipped with a Buffalo motor of 15 H. P. and on her trial trip developed 12 miles an hour. Her cabin is entirely enclosed in glass, all the wood work being of fine quartered oak. The engine is set well forward. She is 36 ft. over all and 33 ft. on the water line; her beam is 7 ft. 6 in. and her draught is but 14 in. While her cabin house appears low yet there is plenty of room for one to walk around.

Smith & Mabley, 7th ave., cor. 8th st., New York, report the following sales of automobile boats: one 75-H. P. motor boat to M. C. Herrmann of New York; one 75-H. P. motor boat to J. I. Blair of New York. Motors only have been built for C. V. Brokaw and J. E. Martin of New York. The company is also building a 30-ft. launch to have the guaranteed speed of 24 miles an hour. It will be something similar



A SMITH &amp; MABLEY PRODUCT.



to the famous Vingt-Et-Un which is equipped with 75-H. P. Smith & Mabley motor. The hull of this launch has been constructed at the company's own plant at the foot of East 83rd st., New York.

Capt. John J. Phelps of Hackensack, N. J., a prominent member of the New York Yacht club will shortly receive his motor boat. She is nearing completion at the yards of the Wyckoff Bros., Inc., Clinton, Conn. Her dimensions are: Length over all 44 ft.; on water line 42 ft.; beam 5 ft. 6 in. on water line and 6 ft. 6 in. on deck. She is planked with a single skin of 7-16 in. Spanish cedar. The frame is of rock elm spaces 6 in. on centers and it is claimed will show the lightest draught of any auto boat her length. The greatest draught is one-third back of the forward end, at which point it is but 6 in. She enters the water somewhat like a wedge and gradually rolls off in the form of a canoe. She is fitted with a Hasbrouck motor of special design. Her stern is of novel type.

The Matthews Boat Co., Bascom, O., report that they have built during the past season for customers 365 hulls, ranging in size from 16 to 54 ft. in length. The heaviest draw is on 21, 25 and 31-ft. boats, with a very fair share of the best class of cabin work in the neighborhood of 36-ft. to 60-ft. boats. They have now left in stock one launch 31 ft. in length, which is practically sold at the present time. At the present time they are building a number of small launches from 16 to 31 ft. for individual parties, and our largest boat at present time is a special finish 51-ft. design No. 5051. This boat is the property of Mr. D. Fleming of Philadelphia. They are also building a 31-ft. hunting cabin launch for Mr. Dan. B. Southard of Chicago; three or four hulls, one of which being a 32-ft. cruiser racer for the Globe Iron Works Co. of Minneapolis, Minn. The engine installed in the latter boat will be 30 H. P. and weighs only 450 lbs.

Mr. Robert C. Fischer, a prominent motor boat enthusiast of the Larchmont Yacht club, New York, received his new boat the Aletes III. The boat measures 64 ft. on the load water line, beam 11 ft. 6 in. and draught 2 ft. 4 in. Her motor is a Standard of 110 H. P. She was designed by T. E. Ferris who was formerly superintendent of construction at Shooters' Island and now of the firm of well known designers Messrs. A. Cary Smith & Ferris. In a recent trip made on Long Island Sound with the Aletes III the boat was barely down to her water line, with scarcely a trace of vibration and was remarkably steady. She showed good speed and it is Mr. Fischer's intention to have her take part in all coming motor boat events. The Aletes II had made some very good races but Mr. Fischer desired something faster and larger and he certainly has it in his new boat. The Aletes II is also equipped with a Standard motor of 21.15 H. P.; her load water line is 41.42 ft.; area amidship section 6.693 sq. ft.

#### AROUND THE GREAT LAKES.

A retaining wall will be built at the lighthouse site at Port Huron, Mich., to preserve the foundation.

The steamer Portage was purchased by the Craig Ship Building Co., Toledo, at marshal's sale this week.

The steamer S. K. Martin, owned by M. Sicken of Marine City, will be placed in dry dock at Detroit and repaired.

The tug White Haven, formerly the Ben Harrison, was put into commission Aug. 12 at the Tonawanda Grand Island ferry.

H. M. Sand & Sons of Oscoda, Mich., owners of the steamer Meriden, have had the boat's name changed to Kongo.

The tug George W. Sigison, Port Huron, Mich., will be converted into a ferry boat by her owners, The Thompson Towing Co.

The steamer Norma, with government engineers aboard,

stranded, Aug. 12, two miles south of Port Dover. She was released.

The steamer Onoko ran aground Aug. 10 on the bar off the Ohio Central railway dock, Detroit, a point which has caused much trouble to vessels this year.

The repairs to the Reed, the big lake freighter, will be completed in about six weeks. A force of 200 men are at work. The sum expended will reach about \$40,000.

Capt. Harris W. Baker of Detroit has secured the contract to raise the steamer City of Berlin, which was sunk in collision with the steamer Chili two weeks ago.

Mr. Thomas W. Kennedy, superintendent of grain shoveling at Buffalo for the Lake Carriers' Association, has been appointed deputy street commissioner at Buffalo.

The new ice-breaking steamer for use in the St. Lawrence river, which the Canadian government has ordered of Fleming & Ferguson of Paisley, will be ready for service Nov. 15.

The tug Sigison which was partially destroyed by fire some time ago is being rebuilt and will be converted into a ferry to run between Point Edward and North Port Huron.

The congressional committee on rivers and harbors will begin its tour of the lakes at Buffalo Aug. 19 for the purpose of investigating proposed improvements to be made at various ports.

The Canadian government boat Norma, Toronto, with Maj. Gray, government engineer in charge, founded on the reefs 2 miles south of Port Dover harbor. The damage done was not serious.

A very fine steam yacht for salt and fresh water will be launched from the Craig ship yard, Toledo, next week. It is being built for H. T. Wicks, a foundryman of Saginaw, and will cost \$60,000.

Abram Smith & Son of Algonac, Mich., are now getting in their oak timber preparatory to the winter's work. They have about 300,000 ft. of white oak piled up in their yards now and are exceedingly busy.

The Ludington Salt Co. is to have a salt dock in the new slip to be built at Waukegan. The Great Lakes Dredge Co. has the contract for building the slip which will be 600 ft. long, 125 ft. wide and 18 ft. deep.

The Rutland Transit Co. has decided to raise the steamer Walter E. Frost of the Ogdensburg-Chicago Line which stranded on Manitou Island in Lake Michigan last fall. The condition of the Frost is not as bad as it is thought.

John M. Nichol, freight steamer of Port Huron, purchased by John Boland of Buffalo from the Union Transit Co., will go into the line between Duluth and Port Huron. General merchandise and grain will be carried in connection with the eastern traffic of the Grand Trunk railroad.

The steamer Gordon Campbell, after a series of tie-ups for debt and other matters is again held at one of the docks in the south branch of the river at Chicago. The owners have been unable to secure a certificate of inspection. The Campbell has about 2,000 cedar railroad ties in her hold.

The schooner Melbourne, lumber laden, in tow of the steamer Nipigon, was sunk by collision with the steamer Thomas Cranage Aug. 14 near the head of Russell's island in the St. Clair river. The Melbourne was badly injured and sank, while the Cranage was run onto the bank.

A libel for \$14,542.20 has been filed against the Canadian passenger and package freight steamer United Empire at Grand Rapids by the Calbick Transportation Co. of Chicago. The libelants allege that their schooner, Herald, sustained damages in a collision with the United Empire, Oct. 10 last.

The \$30,000 libel suit of the owners of the steamer F. E. Spinner against the steamers H. D. Coffinberry and William Castle Rhodes has been settled without a trial. The Spinner was sunk in St. Mary's river in 1900 by the Coffinberry and the owners of the Rhodes were made parties to the suit, it be-

ing claimed that the accident was partially due to her suction.

The Battle Island Paper Co. of Battle Island bought the canal boats John O'Day, E. C. Beeman and J. & H. Kohler from Thurston Bros. of Tonawanda, Aug. 12. The boats left for Syracuse and will be taken to Oswego, where they will go into commission to carry pulpwood from Oswego to Battle Island.

A new type of boat will soon appear at Hamilton, Canada. The craft is a torpedo-stern speed launch, 30 ft. long and less than 5-ft. beam. She will be fitted with a 21-H. P. gasoline engine, and is expected to develop a speed of 17 miles an hour. She is being built by Mr. Turner of the Smart-Turner Co.

Hon. T. E. Burton, chairman of the committee of rivers and harbors, with several members of the committee will visit Buffalo during the latter part of this week for the purpose of investigating the proposed extensive improvements of the harbor at Buffalo. From Buffalo the committee will go to Duluth on the steamer Northwest.

The Jenks Ship Building Co., Toledo, has brought suit against Fremont B. Chesbrough to recover \$10,000 which is due on the Kahtadin. The steamer was to have been completed April 15, 1902, but owing to the big fire in their yards the company claims it could not finish the boat until June 10. The company claims that it was protected by a fire and strike clause.

Col. Thomas W. Symons, a member of the advisory board of consulting engineers of the 1,000-ton barge canal project, has said in reply to the demand of stonemasons and bricklayers in reference to the construction of canal locks, that cement is better than stone and that if stone is used the cost of the canal will be increased by several millions.

The 50-H. P. gasoline yacht Nokomis, owned by Mr. Van Cleave, New York, arrived at Buffalo Aug. 9 from New York. The vessel came through the Erie canal. When the boat leaves the ship yard at Buffalo, where she has gone to have her wheel repaired and to be repainted, she will go to Port Colborne and thence through the Welland canal to the St. Lawrence river.

The steamer Frank Peavey took on 7,375 net tons of ore in 51 minutes at the Escanaba dock last week. The Peavey is equipped with thirteen hatches. On the fourth shift there were five pockets ready to be dumped, but Capt. John F. Johns refused to take but four at that shift, and it was afterwards necessary to run five cars on the dock to complete the bow load which caused a delay of 15 minutes.

Justin Bros. of Ferrysburg, Mich., have on the stocks a steel dump scow, 125 ft. long, 30 ft. beam and 12 ft. deep building for M. Sullivan of Detroit, Mich., will soon be ready for launching. The company has just closed a contract with the government for a light vessel to be used on Peshtigo reef. The company completed during the year a steel suction dredge, 161 ft. long, 36 ft. beam and 4 ft. deep. It is now in operation on the Grand river.

The Knapp roller boat is to be remodeled into a coal carrier. The craft was constructed in the shape of a huge cigar with the cabins for the use of passengers suspended inside the steel shell. It was intended to have the boat propel itself by rolling along the surface of the water, a series of fins extending in spirals about the hull converting the whole ship into a huge screw. In remodeling the boat steel ends will be put in. The top will be cut open and deck houses and a pilot house built above the line of plating. The engines will be equipped with twin screws. When completed the steamer will be used in the coal trade between Lake Erie ports and Toronto.

The schooner Melbourne, lumber laden, in tow of the

steamer Nipigon, was sunk by collision with the steamer Thomas Cranage this week near the head of Russell's island in the St. Clair river. The Melbourne was badly injured and sank to the bottom of the river soon after being struck, while the Cranage was run on the bank. The latter steamer was bound up the river with a cargo of hard coal. The past week has been the most destructive to vessel property ever known in the Detroit-St. Clair river passage. Three collisions have occurred in that time and four wrecks are now on the bottom between this point and Algonac—the steamers A. R. Colborn, City of Berlin and Thomas Cranage, and barge Melbourne.

Litigation over the sinking of the Anchor liner Conemaugh by the Union liner New York in 1891 seems endless. Judge Kohlsaat in the United States district court this week ordered the Anchor Line to pay \$30,000 as half of the value of the cargo on the Conemaugh. The trouble has been all along as to who should pay for the Conemaugh cargo, the courts having held that both vessels were at fault for the collision. The Union Line wanted to divide the loss on the cargo between the two boats but the Anchor Line resisted this contention. The case has gone to the supreme court three times already and will start on its round again as exception will be made to Judge Kohlsaat's ruling. The original sum involved has grown from \$60,000 to \$90,000 with interest.

The steamers Colborn, C. A. Black and Lillie collided Aug. 12 near the upper end of the St. Clair Flats ship canal. The Colborn was badly damaged and sank about 500 ft. south of the canal. She tried to pass the steamer Black, also bound down, while the latter slowed up to enter the narrow passage and the suction created in passing caused her to swing into the steamer Lillie, bound up, after careening off against the west pier of the canal. She then swung around and collided with the Black. The bow of the Colborn was crushed against the steel sides of the larger boat and immediately began to fill with water. To avoid blocking the exit from the north end of the canal, the Colborn's captain started his boat at full speed through the canal toward the south end. The Black was not injured in the collision but the Lillie was damaged to a considerable extent.

The following charters have recently been made by Gardner & Cox, 1 Broadway, N. Y.: The steam yacht Calypso, property of Mr. Richard C. Veit of New York which was chartered through the agency of Gardner & Cox to Mr. George W. Perkins for the earlier part of the season, has been rechartered through the same agency to Mr. S. M. Roosevelt, New York Yacht club; The steam yacht Saghaya, property of Mr. Howard C. Smith, New York, has been chartered to Senator Nelson W. Aldrich of Rhode Island; the steam yacht Sayonara, property of Mr. W. Lanman Bull of New York to Mr. Abram Baudouine, New York Yacht club; the steam yacht Zara, property of Mr. Harrison B. Moore, New York to Mr. Abram Baudouine, New York Yacht club; club; the steam yacht Wana, belonging to the estate of Mr. S. R. Van Duzer, to Mr. J. B. Dennis, New York Yacht club.

Orders have been received at the Charleston navy yard for the construction of a large floating derrick at a cost estimated at \$30,000. The derrick will have a capacity for lifting 20,000 lbs. and will be built of steel, 68 ft. long, 30 ft. beam and 10 ft. draught. Work on this job will be begun as soon as the training ship Cumberland is off the ways on Aug. 17. It is also proposed to lay on two wooden coal barges at the same time.

While the Compagnie Generale Transatlantique earned last year \$1,515,242.39 in excess of all expenditures, no dividend was declared, the entire sum being set aside for the future benefit of the fleet.

## Merchant Marine Commission.

Portland, Ore., Aug. 1, 1904.—Between the time the United States Merchant Marine commission, consisting of Senator J. H. Gallinger of New Hampshire, chairman, Congressman W. F. Humphrey of Washington, Representative Edward S. Minor of Wisconsin, and Congressman Thomas Spight of Mississippi, arrived in Portland Friday afternoon until the party departed Monday evening for San Francisco, they were the guests of a community that had followed the sessions of the body with deep interest from the time the first gathering was held on the Atlantic coast, which fact displayed itself in the manner in which those who had the honor of appearing before the commission spoke upon the all-absorbing topic of the rehabilitation of the American merchant marine.

As the hearings did not convene until Monday, the members of the commission gave themselves up to the enjoyments of the reception that had been planned for them under the direction of the Portland Commercial club, Portland Chamber of Commerce, Portland Board of Trade and kindred commercial organizations. After formally welcoming the commissioners to Portland, they, together with representatives of the municipal bodies, boarded the United States lighthouse tender *Heather*, a new craft commissioned last season for duty in the thirteenth district, and first journeyed to the upper harbor, where half a dozen vessels, all American, some of which were coastwise-built, were loading cargoes of Oregon lumber for off-shore ports, all of them being for the Orient or Manila.

Then the guests were shown the entire harbor with its coasters, grain carriers, foreign lumber carriers and like craft either loading or discharging cargo; the big dredges, two of which are the property of the Port of Portland Commission, and are engaged exclusively in keeping the channel in shape from the mouth of the Columbia to Portland, while a third "digger," the *W. S. Ladd*, was also lying hard by after having undergone extensive repairs to fit her for additional labors in and about Astoria, situated near the entrance to the mighty inland harbor of the Pacific. The *Heather* steamed past the new dry dock at St. Johns, also a state plant, built through the Port of Portland Commission as another facility for the improvement of the commercial interests of the port and as an inducement to shipping. Down the stream went the tender to the mouth of the Willamette, and thence on for a short distance into the broad, expansive Columbia. The commissioners were unanimous in expressing the scenery among the grandest seen since the party had departed from Washington, but the greatest surprise was the busy scenes along the water front as they were entirely unprepared for such a demonstration of the vast commerce enjoyed by the webfoot metropolis.

Sunday they were driven about the city and taken for a trolley ride over the hills surrounding Portland, being given a view of the upper Willamette for quite a distance and being able to see the lower portion of the river where it flowed past the city to join the famous stream which Capt. Robert Gray discovered May 11, 1792, when the good ship *Columbia*, of which he was master, poked her nose into the entrance of waters that today churn with the wheels of all manner of steam craft and roll as glide through them sailing vessels carrying lumber to many Pacific ports and harbors a grain fleet that supplies wheat, barley and flour to the markets of the Flowery Kingdom, Europe, Australia and Africa.

### HEARINGS OPENED AT THE COMMERCIAL CLUB.

The hearings were opened at 10:45 Monday morning in the parlors of the Commercial club. The attendance was much larger than had been expected, many outsiders putting in an appearance to help swell the gathering that contained

agents of foreign shipping firms, grain brokers and many of the marine sphere. Before the morning session was adjourned, the commissioners were given much valuable information of a character that had not been touched upon heretofore, according to the statements of the members, and it was with genuine pleasure the various discourses were listened to. A majority of the Portlanders differed not with the mariners of other regions in pronouncing themselves hostile to subsidizing the merchant marine, but debated in favor of postal subvention, whereby vessels would carry the mails and their crews would be ever ready as members of the naval reserve in the event of emergency.

After Chairman Gallinger rapped for order, W. J. Burns of Balfour, Guthrie & Co., who is also president of the Chamber of Commerce, made a few welcoming remarks, during the course of which he took occasion to touch upon the peculiar conditions confronting Portland through the lack of American ships in these waters. While he admitted it was a difficult task to unearth a remedy for the situation, he advocated the right of American capital to purchase tonnage in the markets of the world, where they were the cheapest and allow the vessels so obtained to be registered under the stars and stripes, and remove the obstacles prohibiting the classification of such vessels under the flag as now exist. He thought they should be allowed every benefit to be gained under the American laws, and it was his opinion a move along that line would quickly result in a vast amount of tonnage being added to the Yankee fleet, now sailing under other bandanas, thus solving the question before the government.

Chairman Gallinger then expressed appreciation, on behalf of the commission, for the cordial treatment extended, and explained that it was not the purpose of the commission to suggest, formulate or exploit any particular plan for the up-building of the merchant marine, but to hear from the men of affairs in the various communities information, and secure data by that means, as to the conditions existing and then determine whether or not it was best to adopt any measures looking to their betterment. The chairman stated the commission has naturally listened to many opinions during the course of its travels in the country, some of which favored free ships or advocated discriminate tariffs on imports, while others looked kindly on the postal subvention idea, now in effect in a way, but "the majority opinion has been, I may say," concluded the chairman, "opposed to direct subsidy."

### DATA SHOWING PORTLAND'S COMMERCE.

The first data presented dealt with Portland's showing, the statistics being compiled by E. W. Wright and Thomas Richardson. This was in the nature of a report as appended:

"Realizing that your time is both limited and valuable, and that your mission here as well as to the other ports of the United States is well understood, it is not the purpose of this committee, representing the marine and commercial interests of Portland, to inflict upon you any historical data regarding the past, but we would be a little less than human if we failed to acknowledge with appreciative thanks the many generous compliments you have individually and collectively paid this city. We knew before you came that our city was unequalled both as to its summer climate and its varied attractions from a natural standpoint, but your enthusiastic indorsement is none the less appreciated. Your compliments to the port and good wishes for the success of the Lewis and Clark centennial exposition next year will always be held in kindly remembrance. You are naturally familiar with the statistics on marine commerce, not only here, but at every other port in the United States, and it is our pleasure to present only such facts as are corroborated by government reports. Portland



occupies a unique, interesting and commanding position in the development of the foreign and domestic trade of the United States, as she is the principal port, metropolis, chief market and commercial center of the great area drained by the Willamette and Columbia rivers, the two chief streams commercially between the Mississippi river and the Pacific ocean—a territory amply able to give support to five millions of people when fully developed—and for these and many other reasons there is no subject touching the improvement of our rivers and harbors, the extension of the American merchant marine or any other similar subject having to do with the increased trade of the United States, in which Portland is not and will be in the future be an important factor.

Lumber, wheat and flour are the three great staples which furnish the bulk of the seagoing traffic from this and other ports of the Pacific northwest, and in these three commodities Portland occupies a commanding position. To illustrate, the relative importance of the different coast ports in the wheat trade is shown by the following shipments for the calendar year 1903:

	Bushels.
From Portland .....	6,790,228
From Puget Sound .....	4,428,859
From San Francisco .....	3,029,408

The figures for the fiscal year ending June 30, 1904, on wheat shipments, as compiled by the department of labor and commerce, are as follows: From Portland, 3,476,453 bu.; Puget Sound, 1,725,073; San Francisco, 1,774,431.

These shipments prove that almost 50 per cent of the wheat shipments from the Pacific coast go out of Portland. Ten of the big wheat carriers dispatched from Portland showed an average of more than 210,000 bu. of wheat each, as follows: The Lime Branch, 259,723 bu.; the Langbank, 21,932; the Centurret, 218,195; the Wilhelmina, 214,879; the Toenkai, 203,281; the Pak Ling, 203,293; the Puritan, 203,296; the Elyon, 198,333; the Elba, 189,400; the Palatina, 187,540; total, 2,102,618.

In both lumber and flour shipments Portland holds the world's record for the number of big cargoes. Ten vessels have been dispatched from this port carrying an average of 3,200,000 ft. of lumber each—to make this more convincing, we append the exact statistics: The Oceano, 3,944,823 ft.; the Tottenham, 3,634,015; the Strathgyle, 3,600,000; the Thyra, 3,550,741; the Guernsey, 3,433,452; the Glenloch, 3,250,000; the Oakley, 3,076,701; the Palatina, 2,908,546; the Adato, 2,777,271; the Norman Isles, 2,770,500; total, 32,606,049.

The largest cargo of flour ever dispatched went from this port on the steamship *Algoa*, and amounted to 85,276 bbl., breaking the world's record by more than 15,000 bbl. Sixteen steamers have left this port with cargoes in excess of 50,000 bbl., the average being in excess of 55,000 bbl. The steamers and the amount of flour carried are as follows: *Algoa*, 85,276 bbl.; *Indrasamha*, 50,629; *Indravelli*, 50,187; *Indravelli*, 57,977; *Indravelli*, 51,184; *Indrasamha*, 52,579; *Indrapura*, 52,176; *Eva*, 51,000; *Thyra*, 51,931; *Indrapura*, 51,351; *Thyra*, 51,068; *Eva*, 50,700; *Aragonia*, 50,800; *Indrasamha*, 50,781; *Adato*, 50,425; *Indravelli*, 50,230; total, 880,560; average per cargo, 55,035.

The value of a few of the principal products of the state of Oregon for 1904, in round numbers, are as follows:

Wheat, oats and barley.....	\$10,000,000
Lumber.....	10,000,000
Forest products.....	9,500,000
Grain.....	5,000,000
Other products.....	3,750,000
Wool.....	3,500,000
Flour.....	3,500,000
Fruit.....	3,000,000
Stocks.....	2,500,000
Total.....	\$50,750,000

"While in the above statistics we confine ourselves to the state of Oregon, it must not be forgotten that large portions of our sister states of Washington and Idaho are dependent upon this port as an outlet to the markets of the world.

"Portland, as stated above, is interested in the support of the Merchant Marine commission, as its report and the action that congress will take upon it will be of great interest to every port in the United States. This city, as a combined manufacturing and wholesale distributing point, is doing an annual business today exceeding \$200,000,000. To refer briefly again to the water shipments on the Columbia river, there were last year shipped 174,808,569 ft. of lumber, and over 65,000,000 ft. of this went to foreign ports.

"Gratifying as is this record, it will be eclipsed during the present year, as the figures for the first six months of 1904, on water shipments alone, showed a gain of over 10,000,000 ft. as compared with the corresponding period of 1903. A member of this committee, to illustrate the force of statistics, has figured out that Portland shipped enough lumber last year to build a plank walk three feet wide clear around the earth."

Congressman Humphrey desired to know what percentage of shipping at this port was conducted under the American flag, and he was informed by Mr. Richardson there was practically none.

#### PERTINENT ADDRESSES FROM SEVERAL SPEAKERS.

W. A. Mears of the transportation committee of the Chamber of Commerce was then called upon. Mr. Mears delivered himself of facts and figures relative to the coastwise trade, explaining the prohibitive rail rates between New York and this coast, and that the steamship lines operating in conjunction with the Panama railroad had issued a corresponding tariff sheet. He said the 20 per cent lower water tariff was no cheaper than the rail rate, as the reduction is absorbed by insurance and the charges for transferring freight at Panama. "We have information that the Pacific Mail is, since the sale of the canal and railway property to the government, endeavoring to secure a continuance of their present concession and are using all possible influence with the canal commission to that end. We are here to ask your commission to use your influence to prevent this, for it is due to the co-operation of the Pacific Mail and the railroad companies that the people of the Pacific coast are unable to secure lower freight rates or competition."

United States Senator John H. Mitchell of Oregon, who was in attendance, queried Mr. Mears as to the source of his information relative to the efforts being made to bring about a continuance of the concession referred to. Mr. Mears gave as his authority the head of a San Francisco freight bureau, who he opined was a prominent and reliable authority upon the subject.

J. Ernest Laidlaw of the firm of James Laidlaw & Co., ship brokers and marine insurance writers, delivered a masterful address of an extemporaneous nature, inaugurating his remarks in opposition to the issues as created through the testimony of Messrs. Richardson and Burns, which was in effect that there were no American ships in the foreign trade of this port. He spoke of the enormous amount of lumber sent away from here annually in American bottoms, admitting it was sailing tonnage. Mr. Burns took occasion to remark there that while his house was at this time loading a cargo of lumber in an American vessel, the schooner *Commerce*, for the other side of the Pacific, the percentage in a year was small. Mr. Laidlaw and Chairman Gallinger then became the principals in a short debate on the question of free ships, Mr. Laidlaw contending that American ship owners should be permitted to buy or build vessels, either steamer or sail, where they saw fit and bring them under an American registry.

The speaker assumed this would not bring about a difference in the business of firms in this country engaged in build-

ing iron and steel craft, as there would be an abundance of revenue to be derived through the construction of the large fleet of war vessels that would be demanded to protect the multitudinous coterie that would be adding to the commerce of the United States under a policy of free ships. He then cited what bounties had done for the French merchant marine. Chairman Gallinger gave some data on that question and on the attitude of Germany in aiding the improvement of her commercial fleet.

Alfred Tucker, Portland agent for Meyer, Wilson & Co., dealt with the question from the standpoint of an importer, reiterating the remarks of Mr. Laidlaw in a measure. It seemed to him, he stated, that as a protectionist he believed in the protection of infant industries, and while ship building could not be classed as such in comparison with other lines, he believed that in the event of foreign-built tonnage being brought under the flag a limited tariff should be imposed on vessels purchased or built outside of the country. He did not mean such a tariff should be in proportion to the difference to the cost of a vessel here and abroad, but in a moderate tariff, not prohibitive but sufficiently heavy to stimulate the American business. Mr. Tucker saw no reason why a foreign bottom could not be naturalized the same as other articles of import. So far as the American sailor is concerned Mr. Tucker said he was well cared for and much better than those of some other nationalities, both in the quality and quantity of rations and as to wages. In concluding he impressed his hearers with the fact that he favored only a limited tariff on vessels, but latitude should be allowed to purchase them where cheapest and to impose a duty on their tonnage when entering the trade under the flag.

Congressman Spight asked if Mr. Tucker meant to say to have a tariff that would be high enough to make the ship's cost, after entry into the American trade, equal to the cost of the same ship built in the United States. Mr. Tucker replied that he certainly did not advocate such a measure, which he thought would prove prohibitive. "My idea is that something should be done by the government to establish lines of mail and passenger steamers between home and foreign ports, and continued until such lines secure trade enough to base a regular business" said the speaker.

"What is your thought as to discriminative duties lower to foreigners who would ship their goods in American vessels," was the next question propounded by Congressman Spight. Mr. Tucker thought it would prove an aid in building up American shipping, but would make little or no difference to the importer or foreign ship owner as the additional carrying charge exacted by the ship owner would absorb the differential. Chairman Gallinger remarked that such discriminations would violate about thirty commercial treaties now in force between the United States and other countries. Congressman Spight rejoined that treaties of that nature can, after thirty days' notice has been given, be abrogated if it was thought American interests were placed at a disadvantage through their operation.

"Do you not think that should we put forth such discrimination those against whom it operated would retaliate by shutting some of our American products out of their market?" asked Chairman Gallinger.

"Not necessarily," replied Mr. Tucker. "We do not find that other nations retaliate against us by shutting out our steel, or structural iron and other home products that now go abroad."

"Do you not think that the admission of foreign-built ships under your proposed duty would ruin the American ship building industry?" next asked the chairman.

"I do not," returned Mr. Tucker. "We have better materials here and we can produce them more cheaply, as is shown by

the fact that we are sending these same materials abroad and under selling foreign competitors."

J. D. Lee of the Board of Trade, submitted an address which he had prepared, but the commission filed it as part of the record, without perusing it for the edification of those present. Thomas Withycombe, a farmer, who had formerly been a tar in the British navy and later an American seaman, read a brief compilation on the subject of building up the merchant marine, launching a proposition in support of a government bounty on exports. The morning session then drew to a close. Senator Gallinger and other commissioners congratulated Mr. Tucker on his address, particularly on his ideas pertaining to the placing of a duty on foreign bottoms, saying his views were the first of that kind the commission had been favored with and that the members were profoundly impressed with them.

#### A MOST INTERESTING WITNESS.

Benjamin I. Cohen of the Portland Trust Co. made one of the most interesting witnesses of the afternoon hearing. The burden of his text was the advocacy of a discriminating duty on imported goods carried into one of the home ports on American built vessels. Mr. Cohen thought a tariff regulation on that order would prove an effective method of regulating the conditions which the commission sought to benefit. He was antagonistic to a subsidy, viewing that sort of a measure in the sense it was generally understood, "first of all because it savored unfavorably; and, secondly, because it meant the payment of large sums to ship owners directly from the treasury and this, in itself, was, in the opinion of the witness, unpopular." Senator Gallinger interrupted the speaker with a query as to the difference between paying money directly from the treasury as a subsidy and stopping the simoleons before they reached Uncle Sam's strong box and paying the specie in the form of rebates. Mr. Cohen said there was but slight difference. Every ship owner, unmindful of his interests, whether large or small, would secure a share of the subsidy or rebate and this would serve as an inducement for any man to invest in ships to carry foreign goods, being certain of collecting rebates for the cargo carried. He spoke at some length upon those lines, being questioned several times by the commissioners, and at the conclusion of his remarks he was paid a high compliment by the chairman, who said: "That comports exactly with the views of this commission."

A communication was read from G. S. McGrath, a shipper, who was on the opposite side of the fence from a subsidy and he took solace in the thought that inevitable laws of supply and demand would regulate the conditions anyhow. He opined the occupation of the citizens of the United States on land demanded so much brain and brawn the time was not ripe to exploit the high seas. "If English, French and German ships can carry cargo cheaper than we can, there is no reason in taxing the whole people for a subsidy to pay a few ship owners an increase of ocean-going rates of freight on merchandise produced by people who are taxed for carrying it," was the burden of his theme.

E. W. Wright aired his views on free ships, directing the gist of his talk by illustrating the progress Germany had made under the free ship policy, incidentally mentioning that the ships of the emperor carry 30 per cent. of our foreign freight. He pointed out that Germany had purchased vessels where possible and its fleet had been hugely augmented as a consequence. He spoke in support of postal subvention on lines already established, but was not favorable to a plan to apply the same aid to routes hereinafter made.

S. C. Spencer, an attorney, presented some statistics, among them being the statement that exports from the United States aggregated \$5,000,000 a day and that not more than 8 per cent. of it was transported in Yankee bottoms. He combined

with his tale a proposal that had already been broached, for increasing the naval reserve.

George Taylor of the firm of Taylor, Young & Co., ship agents and importers, compared the French merchant marine to what might be expected if the same plan was put into execution in the United States and so far as the naval reserve was concerned he thought seamen could be obtained upon as short notice as the American army had been increased during the Spanish-American war, as there were hundreds of masters and mates now in British and American ships who would be available and any number of seamen sailing the seas, some of them of foreign extraction, who were naturalized citizens of the Union, and could be called upon in the event of an emergency. Representative Minor interposed to say he had become a pretty good soldier after but three months' training, but it required five years in which to fit him for life at sea, but Mr. Taylor held to his contention that a sailor could be made for a man-o'-war as quickly as a recruit could be drilled into the art of handling a rifle. Mr. Taylor went on record as an admirer of the German method of fostering a merchant marine. He said the country now had the distinction of owning some of the finest ship yards in the world, though a few years ago its plants were of a poor order, fitted for the most part only for repair work, while at this time handsome, staunch craft were launched on those shores. Buy ships where they can be bought and give postal subvention to lines already established, he echoed. Mr. Taylor pointed out that of twenty vessels loaded at Portland with lumber for offshore harbors last season thirteen of the fleet flew the American flag.

William M. Killingsworth was the last to come before the commissioners and he spoke for a few moments stating that this country was foremost among the powers in nearly every other line and should be in the carrying trade. The sentiment of the residents of the state of Oregon, he said, was for the protection of the merchant marine, at the same time being loyal to the ship building industry. This state has lumber, ores and lands with which to assist the building of ships and in fact could supply all necessary material. This point was to be taken into consideration, he went on, as the Pacific coast was no longer the back door of the United States, and the countries over the ocean were fast being developed and modernized. "If other countries use subsidies, let us use them and we will then have the same sort of weapons as the others in the fight for supremacy on the sea," was the statement that concluded his discourse.

In bringing the hearing to a close Senator Gallinger thanked all who had appeared before the commission in order to facilitate its work, and felt grateful through the fact those who looked upon the rehabilitation of the merchant marine in a national sense wanted no provincialism in the carrying out of the project. "We do not expect it to do good for every state, hamlet or city. We have been placed under obligations through the courtesies extended us by the people of the city of Portland, and in the words of dear little Tim, "God bless everyone!"

#### MARINE COMMISSION AT SAN FRANCISCO.

San Francisco, Aug. 7.—Senator J. H. Gallinger of New Hampshire, president of the Merchant Marine Commission of Congress, Representatives E. S. Minor of Washington, Thomas Spight of Mississippi and W. E. Humphrey of Washington, members; Winthrop L. Marvin, secretary, and Edward V. Murphy, stenographer, with Mrs. Minor, Mrs. Spight, the two Misses Spight and Mrs. Humphrey reached the Oakland Mole at 9:30 a. m. on Wednesday, Aug. 3, from Portland, Ore., by the Oregon express. On arrival they were met by Rufus P. Jennings and H. D. Loveland, representing the San Francisco Chamber of Commerce. At the Union depot, San Francisco, the visitors were

met by other members of the Chamber of Commerce and similar organizations and were taken to the St. Francis hotel for breakfast. By noon they were on board the United States transport tug Slocum, being welcomed by United States Senator George C. Perkins and Congressman E. J. Livernash and W. J. Wynn. Many men well known in the shipping and commercial world were on the tug.

Major C. A. Devol, superintendent of the army transport service, commanded the tug Slocum on its tour round San Francisco bay. The visitors were shown the Golden Gate and the defenses of the harbor, with which they were much impressed. Sausalito, Angel island, the shores of Berkeley, Goat island and Oakland creek were visited in turn. All the ships were decorated in honor of the visitors and the steam vessels and factories emitted loud screeches of welcome. Senator Perkins and the Oakland contingent pointed out to the commissioners the advisability of cutting a channel 500 ft. wide and 25 ft. deep for the whole length of San Antonio estuary (or Oakland creek) and asked their support when congressional aid is sought for the project.

Next the Slocum visited the Hunter's Point dry docks, where the immense Alcoa is being repaired, and the Union Iron Works. Here Congressmen Livernash and Wynn explained the condition and needs of San Francisco. At 4 p. m. the Slocum reached the transport dock and the commissioners went off to their hotels. Senator Gallinger, speaking of the trip said, "You cannot say too much about this wonderful harbor. There is no finer port in the world and we are going to do everything we can to aid in building up a great shipping trade here and in every port of the Union." Congressman Minor said, "San Francisco has become one of the important seaports of our country and is destined to become one of the great maritime ports of the world; but, important as it is at the present time, it is but the beginning of what it is destined to become within a comparatively short time. \* \* \* San Francisco is a great city. You have a harbor unsurpassed in size and but few surpass it in depth. \* \* \* You are in the highway that leads to a future greatness that no man of intelligence will dare to measure at this time."

Representative Humphrey of Washington said that he does not feel that in trying to help San Francisco he is doing anything detrimental to his home ports. "There is enough trade in the Pacific for all of us, and we should all work together. By improving one port the other is stirred to make improvements, and thus the great end we are working for—the upbuilding of the merchant marine—is furthered."

Congressman Spight said that he had had no idea of the size and beauty of the harbor and hoped that the efforts of the commission of which he is a member will devise ways and means that will put the American flag on the majority of the vessels, daily growing in number, that carry cargoes from and bring them to this harbor.

All night the members of the commission were the guests of R. P. Schwerin, president of the Pacific Mail Steamship Co., at dinner at the Pacific Union Club. Mr. Schwerin reminded the commissioners that the mercantile interests must keep pace with the creation of the merchant marine and that here lies the secret of the success of Great Britain and Germany. "We must follow in their footsteps, for there is no doubt that, with American merchants, American traders and American banking corporations located all over the world to transact the agency and financial business of American ships, the means of creating the carrying trade for such bottoms is immensely aided and facilitated."

At 10 o'clock on Thursday morning, Aug. 4, the meeting of the commission was called to order by George A. Newhall, president of the Chamber of Commerce, who assured the commissioners that their presence here was appreciated by the shipping interests of the Pacific coast. Senator Gallinger, on

behalf of himself and his colleagues, expressed appreciation of the courtesy of their reception, going on to say: "I regret to repeat a statement I have made many times—that the merchant marine interests are in a deplorable condition. The commission is here to secure from practical men information that will help us in reaching a conclusion we may present to congress as a report of the result of our labors. We realize that the questions to be dealt with are technical and require much study. In the many cities we have visited we asked those interested, as you are, in the shipping interests of the country to state their case. We ask the same of you, assuring you in advance that the suggestions you may make will be carefully and conscientiously considered by this commission."

JAMES ROLPH, JR., THE FIRST SPEAKER.

James Rolph, Jr., was the first to address the commission. He is an advocate of free ships and differential duties. He said: "It seems strange that manufacturing and business concerns have the right of combination, while that right is denied to common carriers. Combinations for the purpose of regulating the freight rates of railroads or ships engaged in inter-state or foreign commerce are illegal and void under the Sherman act. They are in restraint of trade and commerce. Ship owners may not combine in any way for the purpose of advancing freight. Is it not, therefore, reasonable that congress should foster American shipping in some way as an offset to the Sherman act, which is a direct blow to shipping? American citizens should be permitted to buy foreign-built ships for registration under the American flag, without coasting privileges or the right to participate in a subsidy or discriminating duties. The benefits derived from this would be the possession of their own property and the protection of it. Congress should permit American citizens to purchase foreign vessels and place them under the American flag; compelling them to employ American crews, to be subject to American inspection laws and registered in American ports, but the privileges of the coastwise navigation laws being denied absolutely.

"There is practically 100 per cent difference between the cost of constructing a vessel in Great Britain and in American ship yards. How can an American merchant marine be got under such conditions? American ship builders might be helped by a reduction of duty on imports of steel to reduce their prices. By knowing that American capital had the opportunity of buying foreign ships for registry under the American flag they might be induced to ask a price within reason for building vessels for the coasting trade.

"Import duties on all cargo imported in American-built vessels should be reduced. The American ship in foreign ports would then get the preference of freight to the extent of the reduction of the duty. An American ship in competition with a foreign ship would be enabled to accept a lower freight outward to the extent of the sum earned on the reduction of duty on her imports.

"Foreign vessels employed in trade between ports of the United States and foreign countries should be compelled to pay an increased tariff on all their imports and additional port charges. Foreign subsidized vessels, with low cost of maintenance, are two dangerous competitors to our American-built ships and our American tonnage must be fostered. Congress should make efforts to abrogate any treaties that prohibit the application of a discriminating duty policy."

In response to a question by Senator Gallinger as to why the right to purchase more ships abroad is being sought when many American vessels are lying idle, Mr. Rolph replied: "Had the ships that are lying idle cost less, less capital would be idle. The immense cost of constructing vessels here is one of the principal reasons for the decadence of the Ameri-

can merchant marine. I do not think that the present depression will continue."

The next speaker was E. F. Preston, a director of the Oceanic Steamship Co. He said that the American ship owners labor under three disadvantages:

1. The great cost of construction of vessels in America.
2. The higher cost of operation.
3. The subsidization of foreign vessels against which American ships are forced to compete.

"The postal act of 1891 should be widened in its scope. If it were not for that act, which gives a bounty of \$2 for each outward mile as carriers of the mails between San Francisco, Hawaii, Tahiti, New Zealand and Australia, the Oceanic Steamship Co. could not run. The vessels are subject to the call of the government in time of war and are readily convertible into armored cruisers. The general subsidization of American ships would greatly assist the American merchant marine in regaining its prestige on the sea and would lend strength to the government in the transport service (and in the fighting line, if necessary), in time of war. The American merchant marine should be placed under the control of the department of commerce and labor.

"The postal law should also be amended so as to extend its benefits to all vessels carrying the flag, even if they do not carry the mail. General subsidization of American vessels is what the owners need most. This would place them beyond the withering blast of trade depression and to enable them to tide over the days when there are no cargoes to be had and the maintenance of ships in idleness eats up the profits."

In reply to a question from Representative Spight the speaker said that the fact that ships subsidized by the United States and flying the American flag could be turned over to the government at any time is the highest kind of consideration, as was recognized by the government when the Spanish war broke out.

#### REPRESENTATIVES OF THE COAST SEAMEN'S UNION.

Nicholas Jortall, a member of the Coast Seamen's union, and Andrew Furuseth, its secretary, were asked to explain the grievances of the men who sail before the mast to the commission. N. Jortall said that sailors serve in the merchant marine only two and a half years on an average and that less than 5 per cent of the seamen that sail out of the port of San Francisco are American-born.

"It is the improvement of conditions on shore that draws men from the sea, knowing that its conditions are constantly growing worse. The wages of seamen generally are what they were in 1870. The wages of the men range from \$20 to \$40 per month, according to their position and the destination of the vessel. Men who really prefer the sea are occupied on shore in all sorts of callings."

Andrew Furuseth drew attention to the great loss of life when the Rio Janeiro went down and the small loss when the Queen took fire. The former was manned by Chinese, the latter by American sailors. The American seamen took the passengers off the Queen and conquered the fire by methodical work. He said that men sailing before the mast do not earn enough to enable them to marry. Most sailors are between 20 and 40 years of age and at the latter age are too old to make their way on shore."

He insisted that comfortable quarters and messrooms should be provided for sailors, and showed many photographs of the deplorable conditions under which sailors often live on board ship.

George D. Gray, president of the California & Oregon Steamship Co., spoke in support of a subsidy. He said: "I know there has been a great outcry against a subsidy, but people should remember that the nation needs a merchant marine from which it can draw transports and supply vessels in time of war, and it is far cheaper to have individual capital build



and hold these vessels in readiness for use when needed than for the government to construct and maintain them. If individual capital cannot do this advantageously the government can well afford to assist. Of the many plans that have been proposed to raise the necessary funds the two principal are:

"1. A duty on all goods carried in foreign bottoms. This is open to the objection of distributing our treaties with foreign nations.

"2. Postal subsidies for vessels carrying the mails. The objection to this plan is that it benefits only the corporations that construct and operate large, fast steamers capable of performing the service acceptably. The owners of sailing vessels get no benefit until the trade exceeds the capacity of the steamship company. My idea is a system of tonnage dues on all vessels engaged in the foreign trade. At present about 9 per cent of the foreign commerce is carried in American bottoms. Thus 91 per cent of the fund to be created would at first be derived from foreign shipping. The fund should be distributed to American ships engaged in foreign trade, at a fixed rate per ton per mile, calculated on the actual distance between ports and not on the distance sailed. This would tend to increase the percentage of American bottoms and reduce the percentage of foreign ones, which is what we want. But, if the profit were too great, foreign vessels could come in, pay the tax and compete with our ships. What the rate of payment should be is a question of facts and figures, but it should be liberal."

H. E. Pennell, vice president of the Ship Owners' Association, believes that there should be an export bounty law. He proposed that the federal government shall pay a bounty to the carrier of \$2 per thousand feet of lumber and \$1.50 per ton of merchandise carried in American vessels, steam or sail, bound from an American to a foreign port. "Such a bounty would not only stimulate shipping interests but would also place our ships in an invulnerable position on the ocean. The subsidy of French and other governments has compelled American ships either to operate at a loss to their owners or to retire from active service to await relief from the government. In the lumber trade experience shows that when the foreign ship appears, freight rates become demoralized and decline materially. Every year more foreign tonnage is sent to the Pacific coast than is required to move the grain crop, and the surplus, in order that it may leave the coast with cargo, is offered for lumber at any obtainable rate. This is the reason why the foreign ship makes the rate of freight for which our locally-owned vessels have to carry lumber to Australia, Africa, South America, China and Japan. Our own vessels should have an adequate bounty on the commodities they carry abroad to enable them to meet competition and remain in the business of transporting our products."

Here the commission adjourned and were entertained at the Pacific Union Club by the Ship Owners' Association. At 4:30 p. m. they returned to the Chamber of Commerce in automobiles.

#### FRIDAY AFTERNOON'S SESSION.

The first to address the commission at the Friday afternoon session was Robert Dollar, president of the Dollar Steamship Co. He showed that the construction of a steel ship in America costs twice as much as in foreign ship building yards. This is due partly to the astounding fact that American steel costs \$8 per ton more at the place of manufacture than it does when laid down at the foreign yards. The cost of operating American vessels is from a half to a third more than that of ships under foreign flags. Mr. Dollar said, in answer to a question, that he chiefly employs Chinese on his ships and that in peace he prefers the Orient to the Caucasian. He said that he would be glad

to employ American sailors if it could be done profitably. "There are no tramp steamers of American registry, but British, German and French tramp steamers call at every port and drum up trade for their countries. American tramp steamers ought to sail the seas as the argonauts to herald the coming of greater fleets."

W. H. Tibbetts, manager of the shipping department of C. A. Hooper & Co., lumber merchants, mentioned several minor matters that would benefit the merchant marine. Taxes should be abolished as unjust. From the time a vessel arrives in harbor she has to pay for every service rendered. If a policeman is put on board to protect the vessel, the owners pay for him. The ship derives no benefit from the lighting and policing of the streets of the city in whose ports she lies, as the property on the streets does. Port charges are taxes and are all that a vessel should have to pay. Compulsory pilotage, as established by the state, is unjust. Vessels under a coasting license may go in and out of port without a pilot, but a vessel registered under the laws of many of the states must take a pilot or pay half pilotage.

The United States government should endeavor to have all transportation between the United States and its dependencies done in American ships. It costs more, but the money remains in the hands of American citizens. United States coasting laws should be put in force in all territories under the control of the nation, and all government property should be carried in American ships. Government transports should be used only for transporting troops and their equipment but not to transport ordinary freight. The taxpayer should have the first right to carry government freight. American ships carrying the United States mail should get subsidies equal to those granted by other nations. Nothing helps commerce more than a rapid and efficient mail service. All vessels that receive bounties from their own governments should pay an equivalent tonnage tax.

The next speaker was J. J. Parker, representing the American Association of Licensed Officers of Sailing Vessels. He said that the association strongly recommends that all vessels between 100 and 700 tons (the present minimum tonnage), be compelled to carry two licensed officers. At present 276 such vessels, most of them carrying only one officer capable of navigating them, sail on the Pacific. If the only man on board capable of reading the sun and stars dies, what is to become of the vessel and her crew? Representative Minor said that he thought congress would not compel vessels of 100 tons to carry two licensed officers as this requirement would make the employment of the vessels unprofitable. Mr. Parker suggested that masters should be compelled to give certificates of discharge to all men. Mr. Andrew Furuseth said that shipmasters use these to blacklist men and thus drive many good men from the service. They hold over the sailors the law giving them discretionary power to make what statements they wish on the certificates.

F. M. Todd, editor of the Merchants' Association Review, spoke strongly against subsidies and in favor of free ships. He said that American capitalists ought to be able to go into foreign ship yards and buy vessels, afterwards obtaining American registry for them. Senator Gallinger somewhat crushed Mr. Todd, who quoted the opinion of a professor of the University of California, by saying: "We have lost patience with college professors. We don't want college theories. We want facts from practical men."

Capt. C. L. Robinson, shipping superintendent of the Ship Owners' Association, suggested that each coast state should establish a training school under the supervision and with the aid of the government. This would train men for the warships of the nation and tend to the expansion of the navy.

Mr. Marvin, the secretary of the commission, read a paper submitted by A. Chesebrough, who pointed out that the liberal

subsidies granted by the Japanese and French governments had greatly developed the merchant marine of those nations. "National safety, honor and strength rest on the merchant marine and the government should aid it." The writer of the paper strongly advocated a general subsidy and a specially liberal subsidy to those vessels so constructed that they can be converted into cruisers.

A. L. Wilson, a representative of the California Harbor Association of Masters and Pilots, advocated a general subsidy on all vessels, in proportion to their tonnage. He also suggested that a pension fund be established for the benefit of all sailors who have served more than 20 years before the mast by deducting a certain proportion of their wages. As it is said that only thirty-seven out of the 17,000 sailors that have shipped from the port in the last twenty years had served for the period named, the suggestion has not much value.

J. A. Wilson made a few remarks in regard to legislation for seamen and the session closed.

Mr. R. P. Schwerin, president of the Pacific Mail Steamship Co., made an able address which will be discussed in a later issue of the Review.

#### A PRACTICAL TALK FROM MR. DICKIE.

"George W. Dickie, of the Union Iron Works, has had great experience in ship building and delivered a most interesting address. The substance of his remarks follows. Three conditions work hardship to the builders of ships in the United States—design, labor and material. Labor, which is 55 per cent. of the vessel's cost, is the great difficulty. In America wages are 87½ per cent. higher than in Great Britain. Much piece work is done there at settled rates, but nothing can be accomplished in that direction here. It is not a fact, according to my experience, that American working men are able to produce more than foreigners in a given unit of time.

Material costs much more here than in Great Britain. Woodwork cost about 28 per cent. more in the United States, but steel can be bought in the foreign market from American manufacturers at several dollars less per ton than in the United States. These elements combine to make the cost of building ships in the United States from 35 to 38 per cent. more than in foreign yards. That the difference in wages and cost of material is largely balanced by better equipment is not the case. The yards of England and Scotland are fully as well equipped as our own and the foreign tools are in many cases better than ours. In fact certain tools are imported from there for use here.

In an English yard I saw a ship that is almost a duplicate of the cruiser California in course of construction. The steel for it was bought from the Carnegie Steel Company for a fraction more than \$35.00 per ton, while that used for the California, bought from the same firm, cost more than \$55.00 a ton.

Unless the American ship yards are fostered they cannot exist, and, if they go out of existence, repairs could not be made. To make repairs properly there must be many men ready for an immediate call. These would not be available if no construction were going on. The navy yards cause many of the difficulties. They give shorter hours, higher pay and vacations, tempting away our best men. When work at the navy yards slackens, they are turned off and seek employment with us again. As they are good men, they get it, only to leave us again as before. The Union Iron Works has lost about \$1,200,000.00 through conditions that were beyond control. The government is frequently arbitrary and disputes may stop the work for months.

Senator Perkins said that the rule of the government is that men in the navy yards shall not receive higher pay than in private yards. But Mr. Dickie explained that the government commissioners take the wages of some specially trusted

employee of the private yard as the standard for fixing the wages.

Mr. Dickie, in conclusion, said that government aid of some kind must be given, not only to the ship owner but to the ship builder. At the close of his address the commissioners, with Senator Perkins, Mayor Schmitz and others, took luncheon at the Pacific Union Club. At 2:30 p. m. the commission resumed its session.

Major C. A. Devol, general superintendent of army transports at San Francisco, said that the government had found the cost of operating its own transports to be one-half of the cost of chartering ships from private firms, though the government's transports carried twice as many men. To overhaul and prepare steamers for the accommodation of troops is costly to the steamship companies; and, without making many changes in the vessels, troops cannot be carried as well as in government transports. The freight-carrying capacity of the transports put them on a paying basis. The only exception is the Dix, which, on account of its size, could not be used to carry freight from the Philippines.

Capt. I. E. Thayer, a marine surveyor and ship builder, spoke strongly for free ships, saying that Germany had built up a splendid merchant marine by constructing ship yards from the profits derived from free ships. Senator Gallinger said that Germany allows rebates on materials and subsidies on ships.

Congressman Edward J. Livernash stated that it is believed at Washington that white men cannot work as stokers in the tropics, but on two lines running from San Francisco to tropical ports none but white stokers are employed, and they stand the heat as well as the Asiatics.

A. D. Porter, of the Boiler Makers' and Ship Builders' Union said that work on foreign ships in American yards is scarce because the American yards overcharge owners grossly. Notwithstanding the fact that men's wages are higher at Victoria, B. C., than in San Francisco, a vessel can be docked there for half the price required in San Francisco.

A. F. Lorentzen, local representative of the Victoria Dry Dock Co., said that the United States government ought to take the pilot service into its charge, for the pilots secure their positions by influence and not by competitive examination, and are not so capable of bringing a vessel into port as are many ships' masters. After two or three other speakers had made short remarks, the commission ended its labors at 6 p. m. Senator Gallinger said that in no city had the commission's sessions been so well attended as in San Francisco. He thanked the president and members of the Chamber of Commerce for their courtesy and hospitality.

On Saturday the commissioners made a trip to the summit of Mount Tamalpais on the scenic railway on the invitation of Capt. I. E. Thayer. A sub-committee will visit the ports of the South Atlantic and the Gulf of Mexico in November, and on Nov. 25 the whole commission will meet to draw up its report.

The Quintard Iron Works, N. F. Palmer, of New York, was recently incorporated under the laws of the state of New York, as Quintard Iron Works, and on Aug. 4 the following officers were elected: president, Nicholas F. Palmer; vice president, Stevenson Taylor; treasurer and manager, George Quintard Palmer; secretary and assistant treasurer, James M. Wellman. The company will operate the works at the foot of East 11th and 12th streets, New York, and will manufacture and repair steamers, land and marine engines and boilers, gas works apparatus, sugar machinery of all descriptions, and machinery in general.

The Norfolk navy yard has just completed the big government dredge which was left in an unfinished state by the Trigg company of Richmond when it failed.





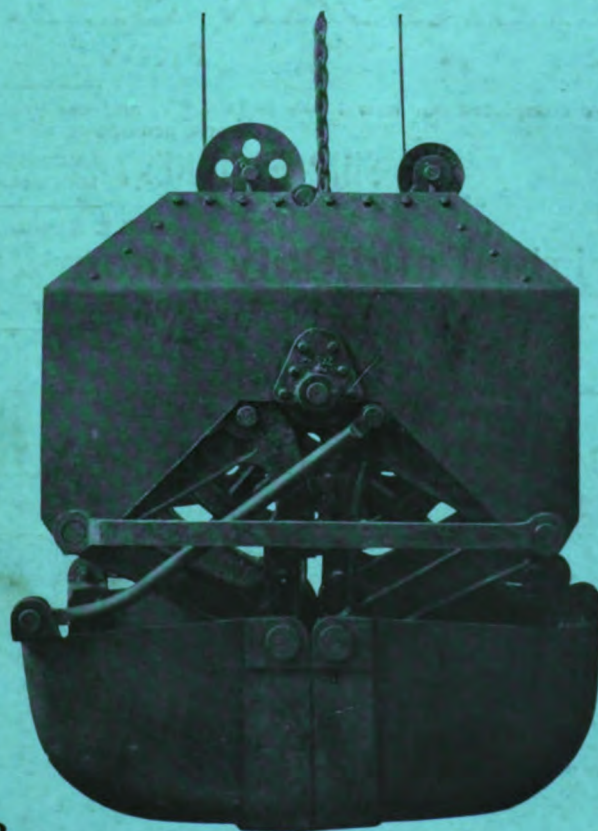
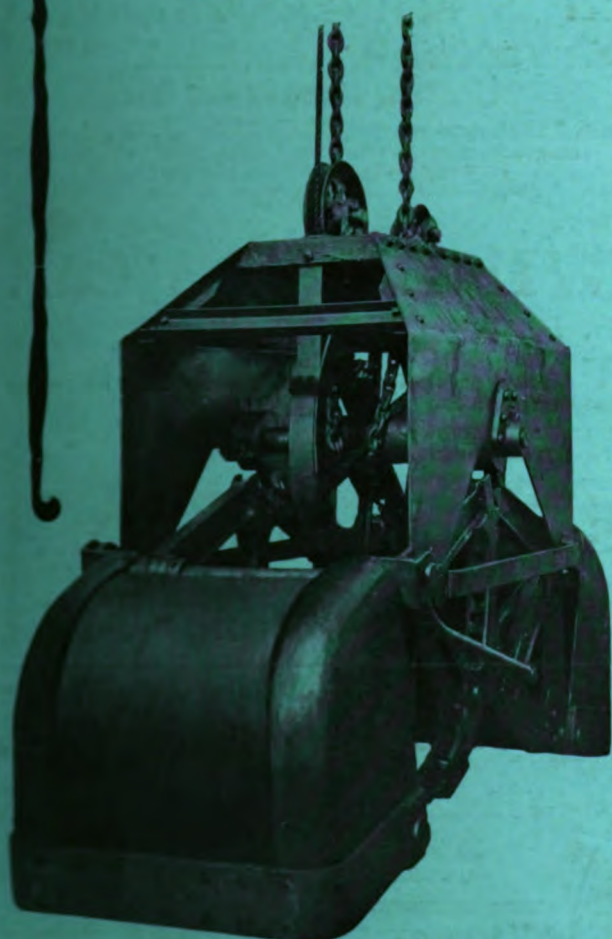
VOL. XXX.

CLEVELAND, O., AUGUST 18, 1904.

No. 7

## THE "SWEDENBORG" PATENT CLAM SHELL BUCKETS

for handling Iron Ore  
in any capacity up  
to ten tons.



THE MACBETH  
IRON COMPANY

Cleveland, Ohio



**AZALEA<sup>Anti-Friction</sup> METAL****Highest Grade Bearing Metal.**

...Used for...

**MARINE and STATIONARY ENGINES,  
MACHINERY and RAILROADS.**

Send for free sample for trial.

**ONCE TRIED, ALWAYS USED.****VICTOR METALS CO.,**

East Braintree, Mass. New York Office, 29 Broadway.

**Fogg's Resilient Felt Mattresses and Cushions.**

Manufactured by

**M. W. FOGG,**

202 Front St., N. Y.

Send for Illustrated  
Catalogue.**Detroit White Lead Works**

DETROIT VARNISH COMPANY,

Manufacturers of

**Paints, Varnishes and Specialties**  
specially prepared for marine use.

DETROIT. - CHICAGO. - BUFFALO.

CLEVELAND BRANCH:

**W. H. DONALDSON & CO.,**  
127 West River Street.

Improved Bolt Helmet

Established 1844.

**A. SCHRADER'S SON.**

32 Rose Street, NEW YORK.

Manufacturer of

**Submarine Armor and Diving Apparatus.**We carry a complete stock of Dresses, Hose  
and Repair Sundries.

All orders filled day received. Write for our prices.

**THE BROWN HOISTING MACHINERY COMPANY, Incorporated.****Engineers, Designers and Manufacturers of  
SPECIAL MACHINERY  
FOR HANDLING COAL AND ORE**

Under the well known "Brownhoist" Patents.

**Cantilever and Gantry Cranes** FOR HANDLING STRUCTURAL WORK,  
MARINE PLATES, ETC.**Locomotive Cranes for Ship Building Yards.****Main Office and Works, CLEVELAND, O., U. S. A.**  
Eastern Office, 26 Courtlandt St., New York. European Office, 39 Victoria St., London, S. W.  
Pittsburg Office, Carnegie Building, Pittsburg, Pa.

Established 1857.

**AMERICAN SHIP WINDLASS CO.**  
PROVIDENCE, R. I.We have completed our new IRON FOUNDRY, and are prepared to execute orders for Castings, guaranteeing first-class  
work, prompt service and reasonable prices.**SHIP MACHINERY** EMBODYING THE LATEST DESIGNS AND MANY  
IMPORTANT PATENTED IMPROVEMENTS.

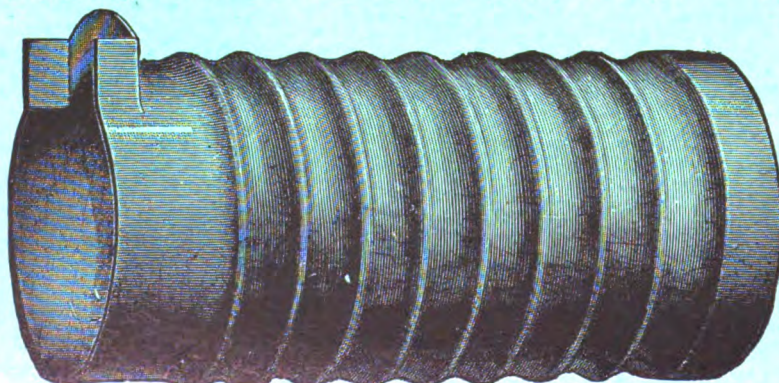
SOLE BUILDERS OF THE

**Original and Only Automatic Steam Towing Machine.**

SEND FOR ILLUSTRATED CATALOGUE.

P. O. BOX 53.

Address: FRANK S. MANTON, President.

**MORISON SUSPENSION BOILER FURNACES****FOR LAND AND MARINE BOILERS.**UNIFORM THICKNESS—EASILY CLEANED  
UNEXCELLED FOR STRENGTH.**Also Fox Corrugated Furnaces.**

MANUFACTURED BY

**THE CONTINENTAL IRON WORKS,**

West and Calyer Sts., NEW YORK.

Near 10th and 23d Sts. Ferries.

Borough of Brooklyn.



# ALLEN PORTABLE PNEUMATIC RIVETING MACHINES.

The following concerns are using our machines



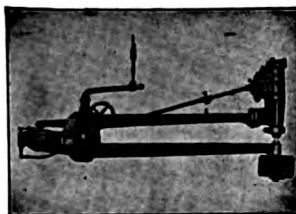
"Cable Address, Riveters" W. U. Code

**JOHN F. ALLEN,**

United States Navy  
Yard, Bremerton,  
Wash.

United States Navy  
Yard, Portsmouth,  
N. H.

United States Navy  
Yard, Mare Island,  
San Francisco, Cal.



Brown Hoisting Machinery Co.,  
Cleveland, O.

New York Ship  
Building Co.  
Camden, N. J.

Wm. R. Trigg Co.,  
Richmond, Va.

Canadian Ship  
Building Co.  
Bridgeburg,  
Ont.



ESTABLISHED 1872.

**370-372 Gerard Avenue, NEW YORK.**

## Steel Castings

from 100 to 75,000 lbs.

## Otis Steel

Ship Plates

Flange Plates

Tank Plates

Steel Car Axles

Forgings of all kinds

"Otis" Fire Box Plates a Specialty.

**OTIS STEEL CO., Ltd.,**  
Head Office and Works, CLEVELAND, O.

New York: Thorpe, Platt & Co., 97 Cedar St.

Montreal: Homer Taylor, 183 St. James St.

AGENCIES.

St. Louis: C. A. Thompson, 516 N. Third St.

San Francisco: John Woodlock, 154-156 First St.

## THE ROBERTS Safety Water Tube Boiler Co.

MANUFACTURERS OF

### High Grade Marine Water Tube Boilers.

Generators of the Highest Quality of Steam.

## Nearly 1500 in use.

Send for Circulars and Stock Sheet.

Works:

RED BANK, N. J.  
Phone, 49 Red Bank.

Main Office:

89 Cortlandt St.,  
NEW YORK, N. Y., U. S. A.  
Phone, 599 Cortlandt.

Cable Address:  
"BRUNIVA."

WEEKLY ILLUSTRATED PRICE 6D.

## "THE SHIPPING WORLD"

Written by Experts

Illustrated by Artists

Annual Subscription, United Kingdom \$5.11  
Other Countries, - - - \$6.82

Contains the best and most informing  
illustrated literature regarding

Naval Architecture  
Marine Engineering  
Commercial & Shipping  
Questions of the Day

### The Shipping World Ltd.,

Effingham House, Arundel Street, Strand,  
LONDON, ENGLAND.

Subscriptions and advertisements for The Shipping  
World accepted at the Marine Review offices.



**U. S. Automatic Injector**

**THE  
U.S. INJECTORS  
ARE BEST.**

Adopted by the United States Government and 200,000 engineers. Buy of the dealer. Do not accept a substitute. Our "Engineer's Red Book" should be in every engineer's pocket. Answers 900 questions of vital importance. Write for it to-day, it's free . . . . .

**American Injector Co.,**  
Detroit, Mich., U. S. A.

## Practical Compass Adjustment

on

### Iron, Composite and Wooden Vessels.

#### Compass Deviation,

Its Various Causes and Proper Cures.

With illustrations.

By Capt. W. J. Smith.

For helping those who have had little or no experience in actual Compass Adjustment.

#### Contents:

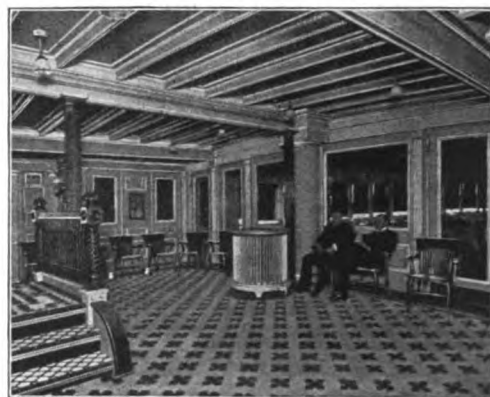
Excusable Negligence.  
Obstacles.  
Facts Connected with an Iron Ship and Her Compass.  
Transient Induction.  
Wooden Steamers.  
On Magnets.  
Preparatory Arrangements.  
The Operation on the Standard Compass.  
Retentive Magnetism.  
Tracing Matters for Ship's Head East or West.  
Heeling Error.  
Description of the Marine Dipping Needle.  
Absolute Necessity for Compass Adjustment.  
Improper Use of Magnets.  
Revising the Compass Record.  
Adjusting by Distant Object.  
Reciprocal Bearings.  
Adjusting by One Magnet.  
Transit Bearings.  
Helpful Reminders.  
Co-Efficients: Meaning of the Terms.  
The Compass Deviascope.  
Uncompensated Steering Compass.

Price,  
Postpaid, \$2.

Order from

**The Penton Pub. Co.,**  
39-41 Wade Bldg., Cleveland.

## INTERLOCKING RUBBER TILING.



As laid by us on the Quarter Deck, Dining-room, Stairway, etc., of the Steamer "City of Troy."

Is noiseless, non-slippery, waterproof and thoroughly sanitary, more durable than stone or earthen tiles, elegant in appearance, manufactured in a carefully selected variety of colors. Endorsed by the best architects and engineers. A perfect floor for business offices, banking-rooms, court-rooms, vestibules, halls, billiard-rooms, smoking-rooms, cafes, libraries, churches, hospitals, hotels, etc. It is especially and peculiarly adapted for Steamships, Yachts, etc. It stands the constant straining and racking without cracking or separating, and its non-slippery feature is of high value. Samples, estimates and special designs furnished upon application.

BEWARE OF INFRINGERS. PATENTED.

MANUFACTURED SOLELY BY

**NEW YORK BELTING & PACKING CO., Ltd.**

91-93 CHAMBERS ST.

NEW YORK

PHILADELPHIA, 724 Chestnut St.

BOSTON, 232 Summer St.

BALTIMORE, 41 South Liberty St.

INDIANAPOLIS, 229 So. Meridian St.

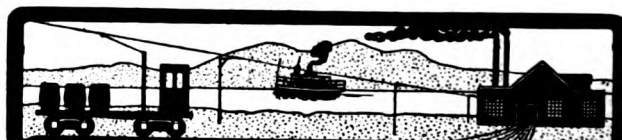
CHICAGO, 150 Lake St.

ST. LOUIS, 411 No. Third Street.

SAN FRANCISCO, 509-511 Market St.

ARTHUR L. GIBSON & Co., 19-21 Tower Street, Upper St. Martin's Lane,

LONDON, ENGLAND.



## Technical Office of Le Mois Scientifique et Industriel.

8 Rue Nouvelle, Paris (9e).

We have with our collaborators opened an office to supply answers on all scientific, mining, technical and bibliographical studies or practical questions. We help *industrials* who have opened new enterprises, *professors* who must resolve unfamiliar problems, *lecturers*, *teachers*, *students*, etc. We furnish a complete course, detailed bibliographical work, complete study, cost prices, plans, drawings, illustrations, projections, etc.

ASK FOR SPECIAL NOTICE.

Add 4 cents for postage.

Short Delays for Answers. The Terms are very moderate.

7,000,000 CARD'S INDEX.

*THE*  
***GREAT LAKES***  
***RED BOOK***

***1904***

**A**LMOST everybody identified with lake shipping awaits more or less anxiously the annual appearance of the "Great Lakes Red Book" the 1904 edition of which has just come from the press. It is purposely made small—vest pocket size, but it contains a list of about 2000 vessels of the Great Lakes, together with the name of master, engineer and owner of each. The arrangement is such that by simply knowing the name of the vessel, one is enabled to find not only the names of the officers and manager, or owner, but also a list of the other vessels controlled by the same interest. The value of the book as a work of reference is obvious. It is extensively used by business houses that furnish supplies to the vessels, as well as by persons desiring to send out circulars or other business communications. Another list of importance in the book this year shows the capacity in iron ore of every vessel that is suited to carrying iron ore. This ore capacity list is made up from averaging all cargoes of 1903.

Published by

THE  
PENTON  
PUBLISHING  
COMPANY,  
CLEVELAND

Price, \$1.00



## SIPE'S JAPAN OIL

Superior to linseed oil for all kinds of painting.

Cheaper and more durable. Does not require the addition of Dryers.  
Not affected by sulphur or salt water

### OUR BLACK PAINTS

Universally used. Best on the market.

For PAINTING STACKS, CYLINDERS, HULLS, ETC.  
Prices and Samples furnished on application.

**JAS. B. SIPE & CO.** Sole Manufacturers,  
ALLEGHENY, PA., U. S. A.

A boat painted white with

## OXIDE OF ZINC

will remain white in all seas and all climates; and tints based on OXIDE OF ZINC will remain pure and unaltered. There is no other satisfactory white pigment for marine service.

FREE: Our Practical Pamphlets:

- "The Paint Question"
- "Paints in Architecture"
- "Specifications for Architects"
- "French Government Decrees"

**The New Jersey Zinc Co.,**

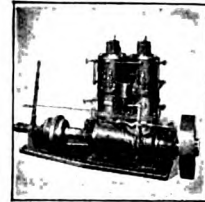
**71 Broadway,  
NEW YORK.**

We do not grind zinc in oil. List of zinc paint manufacturers furnished on request.

## THE MIETZ & WEISS MARINE OIL ENGINE.

SIZES FROM 1 TO 60 H. P.

Adopted by the  
United States and  
Foreign Govern-  
ments.



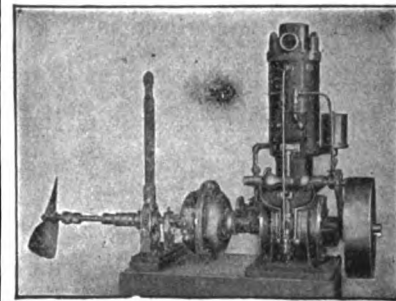
Runs with com-  
mon kerosene, dis-  
tillate or fuel oils.  
No dangerous  
gasolene used.

**MOST ECONOMICAL AND SAFEST POWER KNOWN.**

### Stationary and Marine Engines

For Pumping, Electric Lighting, Charging Storage  
Batteries and All Power Purposes.

**Hoists, Pumps, Air Compressors, Portable  
Engines, Dynamos.**



Highest Award for  
direct coupled engine  
and dynamo, Paris Ex-  
position, 1900.  
Gold Medal, Pan-Am-  
erican Exposition, 1901.  
Gold Medal, Charles-  
ton, S. C., Exposition,  
1902.

Send for Catalogue  
Dept. 102.

**AUG. MIETZ,**  
128-138 Mott St.,  
NEW YORK.



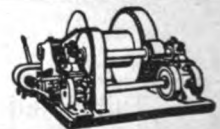
### GASOLINE MARINE ENGINES

Suitable for all Boats from 3: to 200 HP.  
Over 100 in successful use.  
Also the well known and always  
reliable Woolters Gas or Gasolene  
Stationary Engines.



### HOISTING ENGINES

Of all kinds and sizes, and  
for all purposes, especially  
for ship use.  
Docking and Hauling Engines  
and Wire Rope Windlasses.



### AUTOMATIC TOWING MACHINES

Somewhat the cheapest, and  
altogether the best. Positively  
guaranteed.  
Automatic Fog Whistle Machines  
Steam Steering Engines.

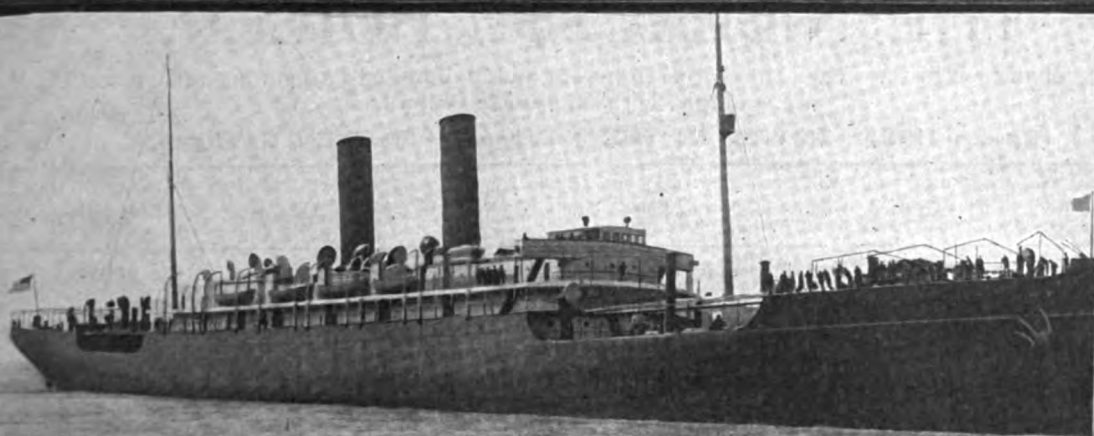
FOR THESE AND OTHER WELL KNOWN SPECIALTIES ADDRESS ALL INQUIRIES TO.

**THE CHASE MACHINE CO. Engineers and Machinists, CLEVELAND, OHIO.**



# OUR SHIPYARD

WITH ITS ACCOMPANYING DRY DOCKS  
AND WORKS, WAS CAREFULLY DESIGNED,  
EQUIPPED AND COMPLETED FOR THE



CONSTRUCTION AND REPAIRING  
IN EVERY DETAIL OF

**BATTLE SHIPS · ARMORED CRUISERS ·  
PROTECTED CRUISERS · GUN BOATS ·  
TORPEDO BOATS · TORPEDO BOAT  
DESTROYERS · SUBMARINE BOATS ·  
OCEAN LINERS · PASSENGER STEAM  
ERS · FREIGHT CARRIERS · ETC · ETC ·**

**NEWPORT NEWS SHIPBUILDING & DRY DOCK CO.  
1 BROADWAY NEW YORK — NEWPORT NEWS, VA.**

After four years of investigation, the Boiler Committee appointed by the British Admiralty have unanimously declared that water tube boilers are more suitable for Naval purposes than cylindrical, and have again placed THE BABCOCK & WILCOX at the head of all types.

## THE BABCOCK & WILCOX CO.

NEW YORK and LONDON

WORKS:

Bayonne, N. J., U. S. A.  
Renfrew, Scotland.

Paris, France.  
Oberhausen, Germany.

## THE NICLAUSSE BOILER.

The largest merchantmen in the world, the S. S. Minnesota and Dakota, of 33,000 tons and 11,000 H. P. each, are equipped with Niclausse Boilers.

641,000 HORSE POWER IN THE NAVIES OF ELEVEN NATIONS.

THE NEW JAPANESE CRUISERS, KATORI AND KASHIMA, OF 16,000 H. P. EACH, AND IN THE UNITED STATES NAVY THE ARMORED CRUISERS PENNSYLVANIA AND COLORADO, 23,000 H. P. EACH, AND THE BATTLESHIPS GEORGIA AND VIRGINIA, 19,000 H. P. EACH, WILL BE FITTED WITH THESE BOILERS.

THE ONLY WATER-TUBE BOILER SUCCESSFULLY USED AND PROVED IN LARGE SHIPS.

Requires no space at sides or rear—cleaned from the front.  
Employs no tube-caps—tubes can readily be withdrawn without mutilation.  
FORGED STEEL THROUGHOUT.

THE STIRLING COMPANY

Chicago.

## PINTSCH GAS LIGHTED BUOYS

*Adopted by the English, German, French, Russian and United States Light House Departments for Channel and Harbor Lighting; over 1700 gas buoys and gas beacons in service. : : :*

**BURN CONTINUOUSLY** FROM 80 TO 365 DAYS AND NIGHTS WITHOUT ATTENTION, AND CAN BE SEEN AT A DISTANCE OF SIX MILES. : : : :

**Brilliant and Steady Illumination.**

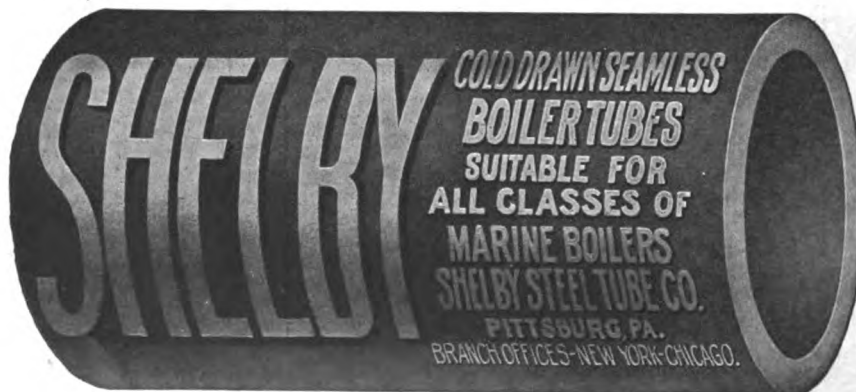
**Economical and Reliable in Operation**

Controlled by the

**SAFETY CAR HEATING AND LIGHTING COMPANY,**

160 BROADWAY,

NEW YORK CITY.



## Your Boilers Need Attention!

SCALE WILL FORM WHEN WATER IS EVAPORATED  
**DEARBORN FEED-WATER TREATMENT**

PREVENTS SCALE

SPECIAL MARINE FORMULA

PRESERVES THE BOILERS

Agents at Lake Ports

# DEARBORN DRUG & CHEMICAL WORKS

G. R. CARR, Mgr.  
MARINE DEP'T.

15 Branch Offices in U. S.

27-34 Rialto Bldg., CHICAGO.

**THE STANLEY B. SMITH COAL AND DOCK CO.,**  
 TOLEDO HARBOR, TOLEDO, OHIO.

1,800 Feet of Dock.

6 McMyler Derricks.

Capacity 8,000 Tons Daily.

Fuel Lighters. —"KANAWHA."  
 —"PENNSYLVANIA."  
 —"HOCKING."

Docks. —PENNSYLVANIA R. R.  
 —HOCKING VALLEY R. R.  
 —TOLEDO AND OHIO CENTRAL R. R.

**SMITH'S COAL DOCK, Detroit River, DETROIT, MICH.**

12 Pockets.

Platform.

Low Dock.

Operated by STANLEY B. SMITH & CO.

MARINE SUPPLY COMPANY—STORE AND ICE HOUSE ON DOCK.

# PITTSBURG COAL COMPANY.

Steamboat Fueling Facilities at Various Points on the Great Lakes:

CLEVELAND HARBOR { 4 Car Dumpers.  
 3 Lighters.

FAIRPORT HARBOR { 1 Car Dumper.  
 1 Lighter.

ASHTABULA HARBOR { 1 Car Dumper.  
 1 Lighter.

ERIE HARBOR { 1 Car Dumper.  
 Fuel Pockets.

DETROIT RIVER BRANCH { Docks and Pockets at  
 Sandwich and Amherstburg.

SAULT RIVER BRANCHES { Dock and Pockets at Detour.  
 Dock and Pockets at Sault Ste. Marie. (The Port Royal Dock Co.)

WE FURNISH ONLY  
 THE BEST GRADE OF

## Pittsburg and Youghiogeny Coal.

GENERAL OFFICE, LAKE DEPARTMENT, PERRY-PAYNE BUILDING, CLEVELAND, OHIO.

## TEN SMITH CONCRETE MIXERS IN ONE ORDER.

MADE IN SEVEN  
 SIZES. ANY COM-  
 BINATION AS TO  
 MOUNTING AND  
 POWER.

COLONIAL SUPPLY CO.,  
 Boston, Mass.  
 JOHN L. KIRK,  
 Pittsburg, Pa.



ENDORSED BY  
 BEST ENGINEERS  
 AND CONTRACT-  
 ORS. SAVES ITS  
 COST IN THIRTY  
 DAYS.

THE WM. PATTISON SUPPLY  
 CO., Cleveland, Ohio.  
 HENSHAW BULKLEY CO.,  
 San Francisco and Seattle.

Nearly 600 in use, all giving perfect satisfaction. Send for Catalogs and Booklet "CONCRETE CATECHISM."

509 W. Fifth St.,  
 KANSAS CITY, MO.

**CONTRACTORS' SUPPLY & EQUIPMENT CO.,**

232 Fifth Ave.,  
 CHICAGO.

WM. L. BROWN, President.

J. C. WALLACE, Vice-Pres.

O. R. SINCLAIR, Sec'y and Treas.

ALFRED G. SMITH, Gen'l Supt.

# CHICAGO SHIP BUILDING COMPANY,

Steel Ship Builders and  
Dry Dock Proprietors.

Dry Dock and Yards: 101st St. and Calumet River, - - - CHICAGO, ILL.

# MILWAUKEE DRY DOCK COMPANY,

MILWAUKEE, WISCONSIN.

Ship Repairs of all kinds.

Two Ship Yards offer every Facility for the Repair of both Steel and Wooden Vessels.

*South Yard Dock is 450 ft. long on keel blocks; 460 feet over all; 60 feet width of gate, and 16 feet over sill.*

*West Yard Dock 312 feet on keel blocks; 45 feet width of gate, and 12 feet over sill.*

RUDDER PIT IN EACH DOCK.

ELECTRIC LIGHTS FOR NIGHT WORK.

Main Office at SOUTH YARD, Foot of Washington Street.

EDWARD SMITH, President.

WILLIAM KNIGHT, Ass't Sec'y and Treas.

O. T. WARREN, Superintendent

# THE BUFFALO DRY DOCK COMPANY,

GANSON STREET AND BUFFALO RIVER.

Operating Four Docks, Sixty-Ton Shear Legs, and in every way Equipped with Modern Plant for the  
Building and Economical Repairs of

STEEL AND WOODEN SHIPS.

LONG DISTANCE TELEPHONE CONNECTIONS:

Office Telephone, 515 Seneca.

President's Telephone, 209 Bryant, Residence.

President's Telephone, 3920 Seneca, Office.

Asst. Sec'y & Treas., Telephone, 609 Bryant, Residence.

# THE SUPERIOR SHIP BUILDING COMPANY,

Ship and Engine Builders.  
Dry Dock and Repairs of all kinds.  
Two Largest Dry Docks on the Lakes.

Large Stock of Material Always on Hand for Repairing Wooden and Metal Ships.

Repairing Promptly Attended to, Night or Day.

West Superior, Wis.



W. L. BROWN,  
President.

JAS. C. WALLACE,  
Vice-President and General Manager.

R. C. WETMORE,  
Secretary and Treasurer.

**DRY DOCKS IN CLEVELAND:**

No. 1, foot Weddell St., 547 ft. x 65 ft. x 15 ft. 6 in.  
No. 2, foot Weddell St., 450 ft. x 50 ft. x 16 ft.

No. 3, Elm St., 340 ft. x 50 ft. x 13 ft.  
Dry Dock at Lorain, 560 ft. x 60 ft. x 17 ft.

# THE AMERICAN SHIP BUILDING COMPANY,

Office, 120 Viaduct, Cleveland, O.

Marine and  
Stationary Engines

## STEEL SHIPS

Boilers and  
Auxiliary Machinery

Sole Agents for the Lakes for the Ellis & Eaves Induced Draft System, as applied to boilers, giving increased power and great economy.

Prompt Attention Given to Ship Repairs of All Kinds

WORKS AT CLEVELAND AND LORAIN

ALEXANDER McVITTIE, President and Manager. WILLIAM C. McMILLAN, Vice President. M. E. FARR, Secretary and Treasurer.  
CHARLES B. CALDER, General Superintendent. FRANK E. KIRBY, Consulting Engineer.

# DETROIT SHIPBUILDING COMPANY,

Ship and Engine Builders, Detroit, Mich.

Sole Owners for the Lakes and Atlantic Coast of the HOWDEN HOT DRAFT SYSTEM as applied to Boilers, giving increased power and great economy.

Steel Ship Yard Located at Wyandotte, Michigan.

Wooden Ship Yards and Dry Docks, Foot of Orleans Street, and Foot of Clark Avenue, Detroit, Mich.

# The Jenks Ship Building Co.

## STEEL SHIP BUILDERS,

## MARINE ENGINES AND BOILERS.

Prompt Attention Given to Repairs of all Kinds on Ships, Engines and Boilers.

OFFICE AND MACHINE SHOPS  
AT FOURTH STREET.

YARDS AT FOOT OF LINCOLN  
AVENUE.

PORT HURON.

-

-

MICHIGAN.

## TO ENGAGE SERVICES

Lighter T. F. NEWMAN, Wrecking Steamer  
FAVORITE, Wrecking Steamer SAGINAW,  
or any Tug or Wrecking Service between Lake  
Huron or Lake Erie, call

PARKER BROS. CO., Ltd., DETROIT, or any office THE GREAT LAKES TOWING CO.

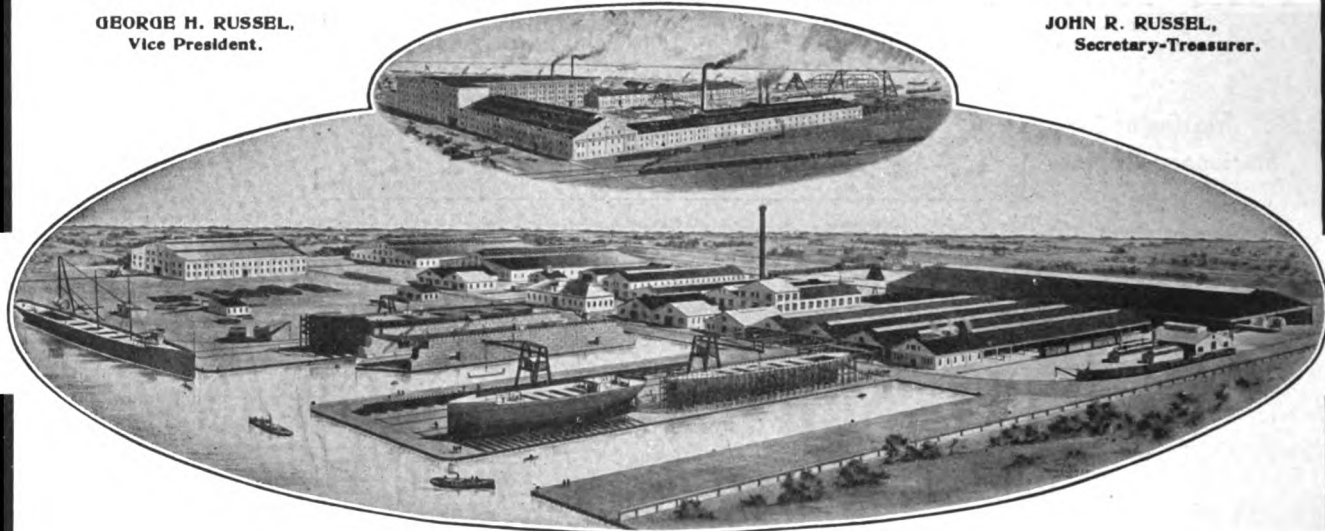
# GREAT LAKES ENGINEERING WORKS

**DETROIT, MICH.**

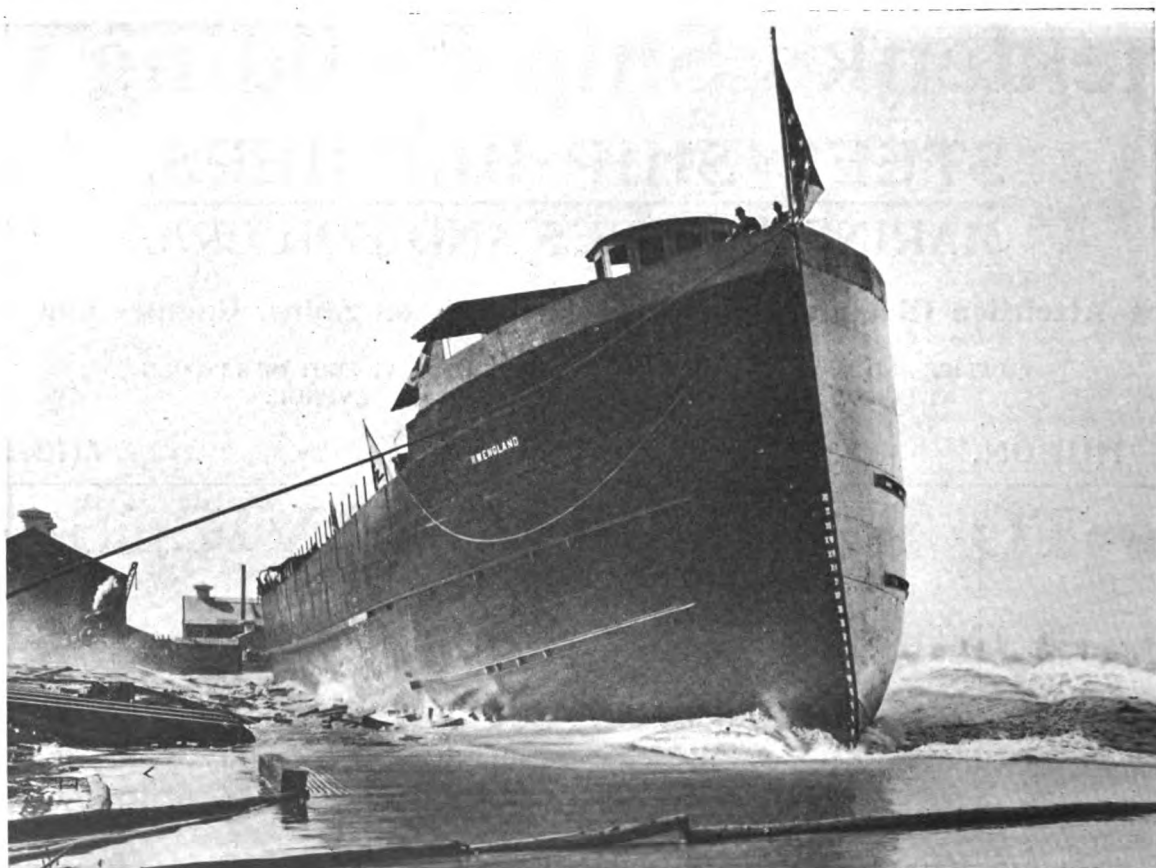
**ANTONIO C. PESSANO, President and Gen. Mgr.**

**GEORGE H. RUSSEL,**  
Vice President.

**JOHN R. RUSSEL,**  
Secretary-Treasurer.



**Designers and Builders of  
Steel Freight and Passenger Ships.  
Marine Engines. = Hydraulic Dredges.**



**Marine Repairs a Specialty.**

# BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (MARCH, 1904)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	-	-	-	-	-	-	-	-	355,560 H. P.
English Royal Navy	-	-	-	-	-	-	-	-	966,300 "
Russian Imperial Navy	-	-	-	-	-	-	-	-	224,500 "
Japanese Imperial Navy	-	-	-	-	-	-	-	-	122,700 "
Austrian Imperial Navy	-	-	-	-	-	-	-	-	56,700 "
Italian Royal Navy	-	-	-	-	-	-	-	-	13,500 "
Chilian Navy	-	-	-	-	-	-	-	-	26,500 "
Argentine Navy	-	-	-	-	-	-	-	-	13,000 "
The "Messageries Maritimes" Company	-	-	-	-	-	-	-	-	87,600 "
Chemins de fer de l'Ouest: (The French Western Railway Co.)	-	-	-	-	-	-	-	-	Steamships
plying between Dieppe and Newhaven	-	-	-	-	-	-	-	-	18,500 "
Total Horse Power of Boilers <u>in Use</u>	-	-	-	-	-	-	-	-	1,884,860

## Société Anonyme des Etablissements Delaunay Belleville

CAPITAL: 6,000,000 FRANCS

Works and Dock Yards of the Ermitage at Saint-Denis (Seine), France.

Telegraphic Address: Belleville, Saint-Denis-Sur-Seine



### ASHTON

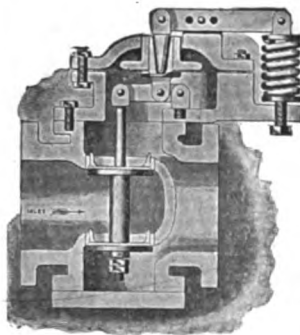
Cam Lever Pop Safety Valves  
and Non-Corrosive  
Steam Gauges.

give highest efficiency and durability.  
Specify them and get the best.

The Ashton Valve Co.

Boston New York Chicago

U. S. A.



### KIELEY

MARINE REDUCING VALVE.

Best Valve Made for Marine Work.

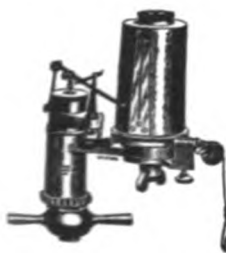
ALSO

Expansion Traps, Steam  
Separators and Open Float  
Traps for Marine Purpose  
sent on trial.

KIELEY & MUELLER

34 West 13th St., N. Y. City.  
Write for Catalogue.

Good for any pressure.



## AMERICAN

THOMPSON IMPROVED INDICA-  
TOR with NEW DETENT MOTION.

DO NOT let this IMPROVEMENT  
ESCAPE YOUR ATTENTION.

SEND AT  
ONCE FOR  
CATALOG

INDICATORS THAT INDICATE  
GAUGES THAT GAUGE  
POPS THAT POP

AMERICAN STEAM GAUGE & VALVE MFG. CO.

NEW YORK.

BOSTON.

CHICAGO.

PRESERVE your copy of the MARINE  
REVIEW by binding it each week into  
the "Emerson Binder." Copies for a full  
year can be inserted in one binder.

These binders mailed to any address  
upon receipt of \$1.

MARINE REVIEW

39-41 Wade Bldg.

CLEVELAND, OHIO.



# PRACTICAL SHIPBUILDING:

A Treatise on the Structural Design and Building of Modern Steel Vessels. The Work of Construction, from the Making of the Raw Material to the Equipped Vessel, including Subsequent Upkeep and Repairs.

By A. CAMPBELL HOLMS,

Member of the Institution of Naval Architects and of the Institution of Engineers and Shipbuilders in Scotland; Surveyor to Lloyd's Register of Shipping. 2 vols. (Vol. I., Text. Medium 8vo. Vol. II., Diagrams and Illustrations. Oblong 4to.)

The plan of the book is briefly as follows: First, attention is given to the fundamental matters which govern the structural design; the various stresses to which the hull is exposed, their straining tendency, and the different structural designs by which the necessary strength to resist them may be secured. Secondly, each important part of the hull is considered by itself, and each one from three points of view viz., its purpose in the structure and the particular stresses and straining effects to which it is liable; the various formations adopted in its design, with the rules governing them as regards scantlings and strength; and a description of the actual work of making it in a shipyard and fitting it to the ship. As a description of the actual work of the shipyard is reading of a special character, it is dealt with separately in the second part of the book, the sequence generally being thus better preserved.

\$ 16.00, *EXPRESSAGE EXTRA.*

PENTON PUBLISHING COMPANY

::

::

::

WADE BUILDING, CLEVELAND.

## Books on Yacht and Launch Building and Sailing

Text Book of Marine Motors. By Captain Du Boulay	-	-	-	\$2.50
Cruises in Small Yachts and Big Canoes. By Speed	-	-	-	2.50
How to Build a Motor Launch	-	-	-	1.00
How to Build a Model Yacht	-	-	-	1.00
How to Build a Speed Launch	-	-	-	1.00
Manual of Yacht and Boat Sailing. By Dixon Kemp	-	-	-	12.00
Navigation for Yachtsman. By V. J. English, R. N.	-	-	-	7.50
Yachts and Yacht Handling. By T. F. Day	-	-	-	1.00
Marine Motors and Marine Launches. By Roberts	-	-	-	1.00
Yacht Etiquette. By Patterson	-	-	-	1.00
Practical Boatbuilding. By Nelson.	-	-	-	1.00
Practical Boat Sailing. By Davies	-	-	-	2.00
Patterson's Illustrated Nautical Encyclopaedia	-	-	-	3.00
Sails and Sail Making	-	-	-	1.25
Small Boat Sailing. By Knight	-	-	-	1.50
Small Yachts. By Kunhardt	-	-	-	10.00
Steam Yachts and Launches. By Kunhardt	-	-	-	3.00
Simple Elements of Navigation. By Young	-	-	-	2.50
The Yachtsman's Kedge Anchor	-	-	-	1.00
Tables for Constructing Ships' Lines. By Hogg	-	-	-	2.00
Yacht Architecture. By Dixon Kemp	-	-	-	16.80

SENT POSTPAID TO ANY ADDRESS

THE PENTON PUBLISHING COMPANY,

CLEVELAND, OHIO.

**WANTED and FOR SALE Department.****FOR SALE.****For Sale—A Bargain  
\$20,000.**

Cost \$25,000 within last year. Original cost \$100,000. A2 Wooden steamer, first class condition; entirely rebuilt; 206 ft. long, 33 ft. beam. Two decks and gangways. Top deck 113 ft. clear between cabins. Boilers, engines, etc., in first class condition. Can carry grain, package freight, coal, ties, etc. Package freight and boom hoist. Can be seen at Buffalo or Chicago. Address R. S. Hicks, 44 King St., Toronto, Can. tf

**For Sale or Trade.**

Freight and passenger steamer for sale or will trade for one somewhat larger. Licensed to carry 279 passengers and is of 257 gross tons; 134 ft. long, 27 ft. beam and 7 ft. deep. Rated A1½. Well fitted for accommodation of passengers and for handling of freight. Speed 12 to 13 miles per hour. Address Box 72, Marine Review, Cleveland. Aug. 25

**For Sale, Charter or Trade  
for Larger Boat.**

The freight and passenger steamer Hazel. Length 96 ft., beam 18 ft., draught about 7 ft. 6 in. Ample deck room housed in forward. Pilot house and texas on upper deck. Boat has good power and is in good working order throughout. Owned and running at Grand Haven, Mich. Address Parker & Rice, Grand Haven, Mich. tf

**Annual Clearance Sale of  
Marine Motors and  
Launches.**

All our 1904 models; motors alone or launches complete. Write and get our special sale price on the outfit you want. Catalog free. Duluth Gas Engine Works, Duluth, Minn. Sept. 15

**Marine Boiler for Sale.**

Scotch marine boiler 11 ft. diameter, 13 ft. long; two furnaces; allowed 120 lbs. steam. Practically new. Address Box 69, Marine Review, Cleveland. tf

**FOR SALE.****Steamship Atlantic for  
Sale.**

American build, Canadian register; twin screws. Registered tonnage, 565 gross, 232 net tons. Loaded draught, 13 ft. aft, 12 ft. forward. Boiler built in 1894. Consumption of fuel per 24 hours about 5 tons. Good tower. Capacity about 400 tons of coal. For sale cheap for cash or on time. Can be inspected at any time at Quebec. For further particulars apply to S. S. Lester, 83 Dalhousie St., Quebec, Can. Aug. 18

**Steam Barge J.G. Nichols.**

Length 106 ft., beam 22 ft.  
Engine 10 by 20 by 11.  
Boiler 8 ft. 6 in. long, 48 in. dia.  
Steam pressure 137 lbs.  
Engine and boiler in first-class shape.  
Steam hoister and derrick forward.  
Will sell cheap to quick buyer.  
Address Walter V. Metcalf, 93 Eliot St., Cleveland. Sept. 8

**Marine Grocery for Sale.**

Established twenty years. Have contracts with most of the large steamship lines for this season. Must sell out at once on account of health. Address Box 71, Marine Review, Cleveland, O. 18

**Steamer for Sale Cheap.**

Steamer Inter Ocean, 214 ft. long, 36 ft. beam. Boiler and engine in good condition. C. S. Mahoney, 17 Main St., Buffalo, N. Y. tf

**Submarine Drill Boat for  
Sale.**

New submarine drill boat for sale. Hull 72 ft. by 24 ft., 5 ft. sides. Enquire of Hickler Bros., Sault Ste. Marie, Mich. tf

**WANTED.****Wanted.**

Tugs and Yachts to build. Will go and build elsewhere if necessary. Thomas Thurston & Son, Alexandria Bay, N. Y. Aug. 18

**FOR SALE.****For Sale—Tug Jim Pullar  
and Scow.**

Tug—built in 1894; 61 ft. long; 15 ft. beam. Water tube boiler. Compound condensing engine. Strong and seaworthy.

Scow—five years old. Excellent construction; 132 ft. long; 29½ ft. wide at center, 26 ft. wide at ends. Platform style, with stake pockets.

Tug and Scow recently overhauled and are in good condition. May be seen at Washburn, Wis., dock.

Address, Fowler-Jacobs Co., Fisher Building, Chicago. Aug. 11

**If you want to buy or sell****Second Hand**

Anchors,  
Anchor Chains,  
Boilers,  
Buoys,  
Capstans,  
Clam Shell Buckets,  
Compasses,  
Concrete Mixers,  
Cranes,  
Dead Lights,  
Derricks,  
Divers' Suits,  
Electrical Apparatus,  
Engine Room Signals,  
Engines,  
Gasoline Launches,  
Hoisting Engines,  
Hoists,  
Life Boats,  
Life Buoys,  
Life Rafts,  
Lighters,  
Logs,  
Propellers,  
Sail Boats,  
Schooners,  
Search Lights,  
Steamboats,  
Steam Steering Apparatus,  
Steam Yachts,  
Towing Machines,  
Tugs,  
Windlass,

patronize the "FOR SALE" and "WANTED" columns of the

**MARINE REVIEW.**

Costs only \$1 per inch per issue.  
Issued every week. Goes everywhere.  
Will do the business for you. Brings returns.

**Steam Yacht Catherine.**

FOR SALE—Length 78 ft., beam 18 ft., triple expansion engines, water tube boiler, allowed 200 lbs.; electric light, search light, mahogany deck house 9 by 16, power launch, complete outfit, all in first-class condition. One of the best family cruising yachts on the Lakes. Inquire Wickes Bros., Saginaw, Mich. tf

**SMOOTH-ON****Iron Cement No. 1**

**Makes permanent repairs on  
Engines, Boilers, Pumps, etc.**

*Send for Catalogue and Prices.*

**SMOOTH-ON MANUFACTURING CO.**

**572-74 Communipaw Ave., Jersey City, N. J., U.S.A.**  
Chicago Office, 61 N. Jefferson Street.



## THE CLEVELAND & BUFFALO TRANSIT COMPANY.

UNPARALLELED NIGHT SERVICE.

NEW STEAMERS "CITY OF BUFFALO" AND "CITY OF ERIE"

Both together being, without doubt, in all respects the finest and fastest that are run in the interest of the traveling public in the United States.

TIME CARD.—DAILY INCLUDING SUNDAY. CENTRAL STANDARD TIME.

Leave CLEVELAND 8 p. m. Arrive BUFFALO 6:30 a. m.

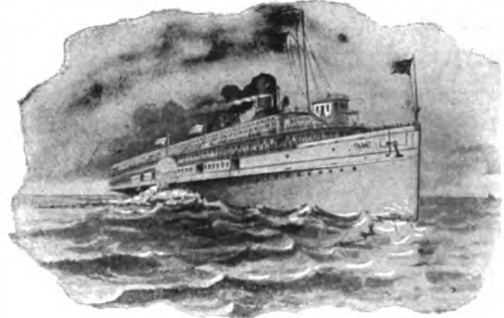
" BUFFALO 8 p. m. " CLEVELAND 6:30 a. m.

ORCHESTRA ACCOMPANIES EACH STEAMER.

Connections made at Buffalo with trains for all Eastern and Canadian points; at Cleveland for Toledo, Detroit and all points West and Southwest. Tickets reading over L. S. & M. S. Ry. will be accepted on this Company's Steamers without extra charge. Special Low Rates Cleveland to Buffalo and Niagara Falls every Saturday Night, also Buffalo to Cleveland. Ask Ticket Agents for tickets via C. & B. Line. Send four cents for illustrated pamphlet.

W. F. HERMAN, G. P. A., Cleveland, O.

## REFRESHING LAKE TOURS VIA THE D. & C. LINE STEAMERS.

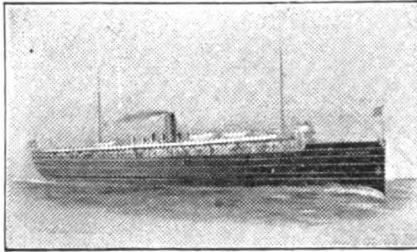


FOUR TRIPS  
PER WEEK  
BETWEEN  
TOLEDO  
AND  
MACKINAC.

DAY AND  
NIGHT  
TRIPS  
BETWEEN  
CLEVELAND  
AND  
DETROIT.

FOR PARTICULARS, ADDRESS  
A. A. SCHANTZ, GEN. SUPT. AND P.T.M., DETROIT, MICH.

## Northern Michigan Transportation Co.



Chicago,  
Ludington,  
Manistee,  
Charlevoix,  
Petoskey,  
Harbor  
Springs,  
Mackinac  
Island.

STEAMSHIPS MISSOURI, ILLINOIS and KANSAS.

Our 1904 Booklet mailed free on application. Address,

R. F. CHURCH, G. P. A. - Chicago.

## NINE BOATS.

GOODRICH  
LINE  
STEAMERS

Passenger and freight service between Chicago, Milwaukee, Racine, Sheboygan, Manitowoc, Green Bay Ports, Grand Haven and Muskegon.

H. W. THORP,  
Gen'l Mgr.

R. C. DAVIS,  
G. P. A.

General Office: CHICAGO, ILL.

## United Fruit Co's Steamship Lines.

CARRYING FAST UNITED STATES AND FOREIGN MAILS.

First-Class Passenger Service to Jamaica.

Weekly Sailings from Boston and Philadelphia.

Summer Rate May 1st to October 1st. { One Way, \$35  
Round Trip, \$60

FOR FULL INFORMATION APPLY TO

DIVISION PASSENGER AGENT,

Long Wharf, Boston, or Pier 5, No. Wharves, Philadelphia.

## The Niagara, St. Catharines & Toronto Railway & Navigation Co.

First class Passenger Service  
between Toronto, Niagara Falls, N.Y.  
and Buffalo.

Fast Freight Service to all points.

FOR FURTHER INFORMATION APPLY TO

H. DAVIS, G. P. A.

W. N. WARBURTON, G. F. A.

E. F. SEIXAS, GEN. MGR.

## Manitou Steamship Co.,

"The Mackinac Line."

In service the famous steel constructed  
STEAMSHIP MANITOU.

Three times each week between Chicago, Frankfort, Northport, Charlevoix, Petoskey, Harbor Springs and Mackinac Island.

Passenger Service Exclusively.

Illustrated booklets, route and rate books, containing about 200 different combination tours to select from, mailed free for the asking. Address

JOS. BEROLZHEIM, G. P. A., Chicago.

## The Erie & Western Trans. Co.

ANCHOR LINE.

PASSENGER SERVICE Steamers.

India.	China.	Japan.	Tionesta.
Buffalo.	Erie.	PORTS OF CALL.	Cleveland.
Detroit.	Mackinac Island.		Sault Ste. Marie.
Marquette.	Houghton.		Hancock.
	Duluth.		

FREIGHT SERVICE Steamers.

Alaska.	Codorus.	Mahoning.	Schuylkill.	Conestoga.
Muncy.	Clarion.	Delaware.	Juniata.	Lehigh.
Lycoming.	Susquehanna.	Wissahickon.		Conemaugh.
	PORTS OF CALL.			
Buffalo.	Erie.	Cleveland.	Detroit.	
Sault Ste. Marie.	Marquette.	Houghton.	Hancock.	
Duluth.	W. Superior.	Chicago.	Milwaukee.	

J. C. Evans,  
Western Manager,  
BUFFALO, N. Y.

Chas. E. Markham,  
General Passenger Agent,  
BUFFALO, N. Y.



**WARD LINE**

THE NEW YORK & CUBA MAIL  
STEAMSHIP CO.

POPULAR ROUTE TO  
**CUBA, NASSAU, MEXICO**

FINEST AND LARGEST STEAMSHIPS SAILING  
FROM NEW YORK TO OTHER THAN EUROPEAN  
PORTS. HOLDERS OF THE RECORD BETWEEN  
HAVANA AND NEW YORK -- 1,240 MILES IN 61  
HOURS.

FOUR SAILINGS EACH WEEK BETWEEN  
**NEW YORK and HAVANA.**

WEEKLY SERVICE TO GUANTANAMO, SANTIAGO, MANZANILLO  
AND CIENFUEGOS, CUBA, PROGRESO, VERA CRUZ  
AND TAMPICO, MEXICO.

SEMI-MONTHLY SAILINGS TO  
**Nassau, N. P. Bahamas.**

LOW RATES OF FREIGHT AND PASSAGE.

SEND FOR OUR SCHEDULES, RATES AND DESCRIPTIVE MATTER.

**James E. Ward & Co.**

GENERAL AGENTS

90 Wall Street, NEW YORK.

**AMERICAN LINE**

PLYMOUTH  
CHERBOURG  
SOUTHAMPTON

CALLING AT CHERBOURG WESTBOUND.

Sailing From New York Every Saturday at 9:30 a. m.

**St. Louis**  
(11,629 tons)  
**New York**  
(10,798 tons)

**St. Paul**  
(11,629 tons)  
**Philadelphia**  
(10,786 tons)

Special Express Train from Plymouth and Southampton  
to London and between Cherbourg and Paris.

**RED STAR LINE**

NEW YORK  
ANTWERP  
LONDON  
PARIS

CALLING AT DOVER FOR LONDON AND PARIS.

Sailing Every Saturday at 10:30 a. m.

**Finland**  
(12,760 tons)  
**Vaderland**  
(12,017 tons)

**Kroonland**  
(12,760 tons)  
**Zeeland**  
(11,905 tons)

One of the Shortest Routes to BELGIUM, HOLLAND, FRANCE,  
GERMANY, THE RHINE, SWITZERLAND and ITALY.

9 Broadway, New York.

Broad and Sansom Sts., Philadelphia.  
India Building, 84 State Street, Boston.  
1306 F St., N. W., Washington, D. C.  
219 St. Charles St., New Orleans  
90-96 Dearborn St., Chicago.  
Century Building St., Louis.  
Guaranty Building, S., Minneapolis.  
21 Post St., San Francisco.  
375 Robert St., St. Paul.  
41 King St., East Toronto.  
17 St. Sacramento St., Montreal.

**PIERS: 14 & 15 NORTH**

**RIVER, FOOT OF FUL-**

**TON ST., NEW YORK.**

**Mexican - American Steamship Co.,**

The Rail and Water Route to Mexico,  
via New Orleans, La., and Galveston,  
Texas.

**A. L. ROBY,**  
Vice Pres't and Mgr.  
NEW ORLEANS, LA.

**F. N. LUFKIN,**  
Sec'y and Treas.  
NEW ORLEANS, LA.

General Offices: 632 Gravier Street.  
New Orleans, La.

**New Orleans-Tampico-Vera Cruz Line**

**S. S. NOR.**

**S. S. NORHEIM.**

Freight and passenger sailings every  
two weeks, connecting with all rail-  
ways from Tampico and Vera Cruz  
for interior points.

**L. PALMER, Agent,** New Orleans, La.

**GALVESTON - TAMPICO LINE**

**S. S. IRIS.**

**S. S. FARMAND.**

Weekly Sailings.

Fast freight service from the United States  
to Mexico, via Galveston at Tampico, con-  
necting at Tampico with the Mexican  
Central Railway for all interior points.

**W. H. RICHARDSON, Agent,** Galveston, Texas.

**BOSTON STEAMSHIP CO.**

S. S. "SHAWMUT" S. S. "TREMONT" S. S. "LYRA"

Japan, South China and Manila Steamship Line

Operated in connection with the

**Northern Pacific and Great Northern  
Railway Companies.**

Monthly Passenger and Freight Service from  
Tacoma and Seattle, Washington.

New Twin-screw American Steamships of  
10,000 tons register. Exceptionally large  
staterooms, all outside.

OWING TO THE GREAT SIZE OF THE SHIPS,  
AND THE IMMENSE CARGOES CARRIED IT HAS  
NEVER BEEN NECESSARY TO USE RACKS ON  
THE DINING TABLES.

Rates at any office of

NORTHERN PACIFIC RAILWAY,  
GREAT NORTHERN RAILWAY,  
CHICAGO, BURLINGTON & QUINCY RAILWAY,  
THOMAS COOK & SONS, Tourists Agents.

**A. WINSOR, PRES.**  
Boston, Mass.

**F. WATERHOUSE, AGENT,**  
Seattle, Wash.

## STAR CONDENSER PACKING TOOL.

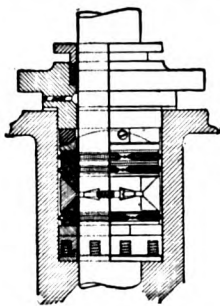
J. H. Schlosser  
Patent.



Manufactured for  
5/8-in., 3/4-in. and  
7/8-in. tubes.

This tool effects a saving of from 50 to 60 per cent. over hand work and any other tool.

Exclusively Manufactured by **MATTESON & DRAKE, 706-707 Bourse, PHILADELPHIA.**



### Katzenstein's Self-Acting Metal Packing

For PISTON RODS, VALVE STEMS, etc. of every description for Steam Engines, Pumps, etc., etc. Adopted and in use by the principal Iron Works and Steamship Companies in this and foreign countries.

FLEXIBLE TUBULAR METALLIC PACKING, for slip-joints on Steam Pipes, and for Hydraulic Pressure; also METAL GASKETS for all kinds of flanges and joints.

For full particulars and reference, address

**L. KATZENSTEIN & CO.**

GENERAL MACHINISTS, BRASS FINISHERS, ENGINEERS' SUPPLIES.  
358 West street, New York.

**Marine Manfg. & Supply Co.,**  
157 and 158 South St.,  
New York.



Ship Fittings and Supplies,  
Capstans, Windlasses, Steering  
Apparatus, Engine Room Tele-  
graphs, Brass Air Ports,  
Dead Lights, Pumps, etc.

Catalogue A—Air Ports, Ventilators, etc.  
Catalogue B—Windlasses, Pumps, etc.  
Catalogue C—Steering Apparatus.  
Others in course of preparation.

### RELIANCE MFG. CO.

MARINE GASOLINE ENGINES 4 to 150 H.P.,  
2 to 6 cylinders. Lightest weight. Simplest. Highest  
Efficiency. :: :: Special Designs for Auto Boats.

CITY ISLAND, N. Y. CITY.

### THOS. DREIN & SON,

TATNALL ST. BELOW RAILROAD, WILMINGTON, DEL.



BUILDERS OF METALLIC LIFE  
BOATS AND RAFTS, YACHTS  
AND PLEASURE BOATS.

LIFE PRESERVERS.

OUTFIT FOR LAKE STEAMERS  
A SPECIALTY.

### •Neversink Cork Jackets and Life Belt.

Warranted 24 pounds. Buoyancy and full weight of Cork, as required  
by U. S. Inspectors.

Consolidated Cork Life Preservers. Ring Buoys and Fenders.

SAFEST.

CHEAPEST.

Approved and adopted by U. S. Board of Supervising Inspectors. Also adopted by the principal Ocean, Lake and River  
Steamer Lines as the only Reliable Life Preserver. Awarded four Medals by World's Columbian Exposition.



METALLIC  
and  
WOODEN  
LIFE  
BOATS.



Metallic Life Rafts. Marine Drags.  
Manufacturers of Woolsey's Patent Life Buoy—the  
lightest, cheapest and most compact life raft known.  
**DAVID KAHNWEILER'S SONS.**  
437 Pearl Street, New York City.  
Send for Illustrated Catalogue.

### PHOSPHOR BRONZE.



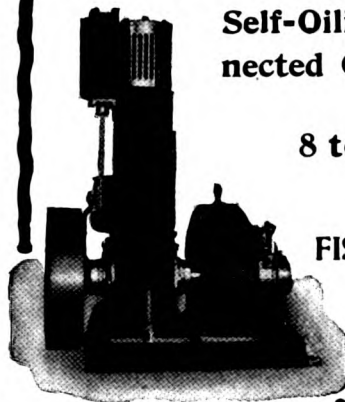
THE PHOSPHOR BRONZE SMELTING CO. LIMITED,  
2200 WASHINGTON AVE. PHILADELPHIA.  
"ELEPHANT BRAND PHOSPHOR-BRONZE"  
INGOTS, CASTINGS, WIRE RODS, SHEETS, ETC.  
— DELTA METAL —  
CASTINGS, STAMPINGS AND FORGINGS.  
ORIGINAL AND SOLE MAKERS IN THE U. S.

DELTA METAL

### Self-Oiling, Direct Connected Generating Sets

from

8 to 25 K. W.



FISHER ELECTRICAL  
WORKS,

DETROIT, MICH.

### A TRUSCOTT BOAT.



SIMPLE. SAFE. SPEEDY. RELIABLE.

It may be possible to build better and safer boats but it hasn't been done yet. We send a completely illustrated catalogue and price list free, which tells you all about boats and why Truscott Boats Excel.

TRUSCOTT BOAT MFG. CO.

ST. JOSEPH,  
MICH.

### British Admiralty Charts

The latest Editions of Charts,  
Plans and Sailing Directions  
Published by the British Ad-

miralty. Can be obtained from  
Admiralty Agent by Appointment.

J. D. POTTER,

145 MINORIES, LONDON, ENGLAND.

OFFICIAL CATALOGUE OF CHARTS (380 pages) 1s.

An Abridged Catalogue of Charts of Nautical Books (free on application.)

## The Wm. Cramp & Sons Ship and Engine Building Co.

PHILADELPHIA, PA.

### BRASS FOUNDRY

PARSONS  
MANGANES BRONZE

PARSONS  
WHITE BRASS

Propeller Castings of all kinds a specialty.  
Castings and Ingots for marine and land purposes  
of high tensile strength and best composition.

## ROACH'S SHIP YARD.



Delaware  
River Iron  
Ship-Build-  
ing & En-  
gine Works  
Chester, Pa.

Builders of Steamships and Marine Machinery.

SHIP-BUILDING IN ALL ITS BRANCHES.

## Fore River Ship and Engine Co. Successors to Steel Ship and Marine Engine Builders.

### CONTRACTORS FOR

U. S. Torpedo Boat Destroyers Lawrence and Macdonough.  
U. S. Protected Cruiser Des Moines.  
U. S. Battleships New Jersey and Rhode Island.  
U. S. Steam Light-Vessel No. 72.

OFFICE AND WORKS, QUINCY, MASS. U. S. A.

## The Atlantic Works, Builders of Steamships, ..... of Steam Yachts, Tow Boats Etc.

EAST BOSTON MASS.

Marine Engines, Boilers and Tanks.  
Heavy Machinery and Plate Iron Work  
Three Marine Railways.

## A NEW MAP

showing in detail the entire

## WATER FRONT OF BUFFALO, N. Y.

Giving Sounds, Principal Buildings, Railroad Connections, Etc. A copy will  
be forwarded to responsible parties for inspection, on request.

Price, Cloth Backed, \$7.00.

Marine Review, 39-41 Wade Bldg., Cleveland, O.

## The Allen Dense-Air Ice Machine

Contains no chemicals, only air. Proven by many years' service in the  
tropics on United States men-of-war, steam yachts and passenger steamers.  
A HUNDRED ARE IN DAILY SERVICE ON STEAMERS.  
**H. B. ROELKER, 41 Maiden Lane, NEW YORK**  
Consulting and Constructing Engineer. Designer and  
Manufacturer of Screw Propellers.

## THE LOCKWOOD MANUFACTURING CO.

EAST BOSTON, MASS.

ENGINEERS AND MACHINISTS.

Builders of STEAMSHIPS, TOW BOATS and MARINE ENGINES  
REPAIRING OF HULLS AND MACHINERY.

## W. & A. FLETCHER CO.

NORTH RIVER IRON WORKS.

## MARINE ENGINES, BOILERS, Etc.

Hudson, 12th and 14th Streets, Hoboken, N. J.  
Take Ferry from foot of West 14th St., N. Y.

## The Shipowners Dry Dock Co.

Chicago, Ill.

Building and Repairing of Steel and Wooden Ships with economy  
and dispatch.

Yard and Dry Docks: Halstead St. and North Branch  
Largest Dry Dock: 480 ft. on keel blocks.

Office, 381 No. Halstead St. Phone, North 1658.

## MANITOWOC DRY DOCK COMPANY

SHIP BUILDERS

Facilities for Repairs to Steel and Wooden Vessels.

MANITOWOC - WIS.

Office Phone { Long Distance 423.  
Zenith 423.

Residence { Long Distance 719-4.  
Zenith 846.

## GOGEBIC STEAM BOILER WORKS,

J. F. DACEY, Manager.

Boilers, Tanks and Sheet Iron Work,  
Boiler Fronts and Grate Bars.

SPECIAL ATTENTION GIVEN TO REPAIRING.

Office and Works:  
409 LAKE AVE. SOUTH.

DULUTH, MINN.

## MASTERS AND ENGINEERS ATTENTION!

When in need of Repairs to Engine or Boiler, Call on

**THE MARINE IRON CO., Duluth, Minn.**

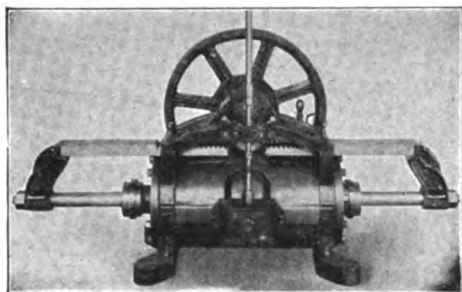
FOR SHOP, FOUNDRY, BLACKSMITH AND BOILER WORK.  
SUPPLY BOAT AVAILABLE AT ALL HOURS.

Foot of 12th Ave., on the Duluth Dredge & Dock Co. Dock  
Old Phone No. 1270.

## ICE-CRUSHING CAR FERRIES OF THE GREAT LAKES.

Complete Structural Description with Line Drawings and Photos of the Various  
Types in the Ship Building Edition of Marine Review. Price 25 cents.



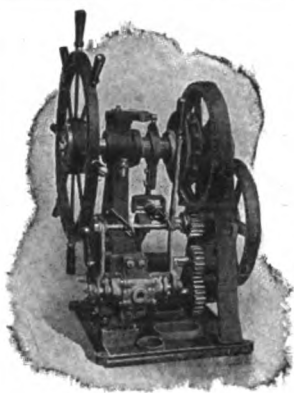
**A STEAM STEERER**

**DIRECT  
and  
POSITIVE  
QUICK ACTING.**

Especially adapted for Steam Yachts, Ferryboats, Lake, Ocean and Harbor Tug Boats.

Send for Catalogue and Particulars.

**MOULTON STEERING ENGINE CO., 17 STATE STREET, NEW YORK CITY.**



**THE  
Dake Pilot House  
Steam Steerer.**

A Simple, Compact and Durable Machine. Occupies Small Floor Space.

Write for descriptive circulars and prices.

MANUFACTURED BY  
**The Dake Engine Co.**  
GRAND HAVEN, MICH.

**To the Master and Owner.**

There are four good reasons why you should buy your Charts from the Marine Review:

- ¶ The charts sold by the Marine Review are thoroughly up-to-date.
- ¶ They are bound with tape so that they will not tear the first time they are handled.
- ¶ If you so desire them, they can be backed with linen so that they will wear as long as the vessel itself.
- ¶ They are better and cost less than any you could obtain elsewhere.

**The Marine Review,**

39-41 Wade Building, - Cleveland.

**PARTIAL LIST OF  
TUGS**

ON THE GREAT LAKES USING

**Beck Pat. Steam and Hand Steering Gear**

"Dickenson"	"Spaulding"	"Tomlinson"
"Protection"	"Duncan City"	"Lutz"
"Industry"	"Welcome"	"M. G. Hausler"
"Prodigy"	"Golden"	"Van Schaick"

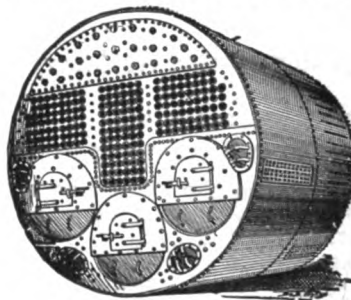
**Pawling & Harnischfeger,**

Clinton and So. Water Sts., Milwaukee, U. S. A.

**"FOREST CITY" MARINE PAINT**

A Paint Made Expressly for This Purpose  
**The Forest City Paint & Varnish Co.,**  
CLEVELAND, OHIO.

**Northwestern Steam Boiler & Mfg. Co.**



**DULUTH, MINN.**

MANUFACTURERS OF

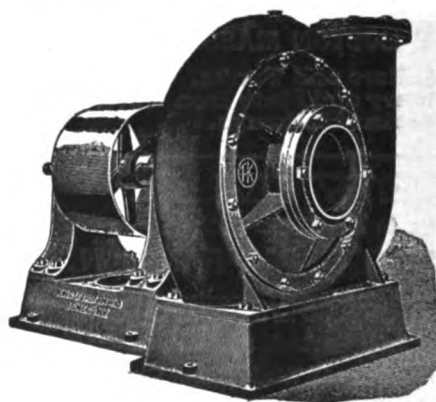
**Boilers, Engines and Machinery.**

Special facilities for Marine Work. Repairs promptly attended to Night or Day.

We carry a complete line of Marine and Engineers' Supplies.

TELEPHONES:  
OFFICE AND WORKS, 618.  
Residence Calls:

M. A. RYAN, Pres. and Gen'l Mgr., 776 R.  
J. H. OPPERMAN, Secretary, 879 R.  
E. KRIZ, Superintendent, 557 M.



DREDGING, WRECKING  
CIRCULATING  
AND BALLAST PUMPS.

**MARINE  
BOILERS.**

**Kingsford Foundry  
& Machine Works,**  
OSWEGO, N. J.

**Patterson's  
Nautical Encyclopedia.**

PRICE, \$3.00

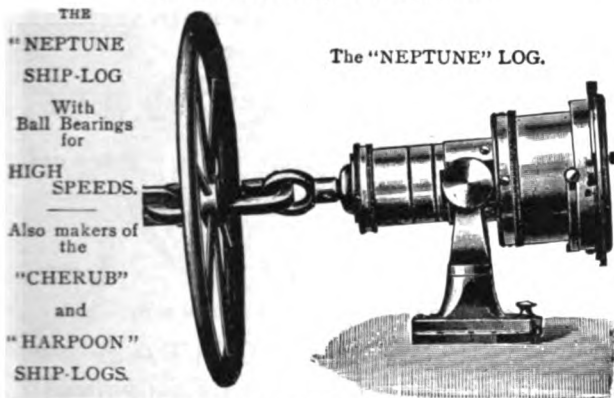
Is in all respects a work up to date, correct as to every term known to the shipping world. Sent upon approval. Carriage prepaid.

**THE MARINE REVIEW**

**CLEVELAND.**

## THOMAS WALKER & SON,

BIRMINGHAM, ENGLAND.



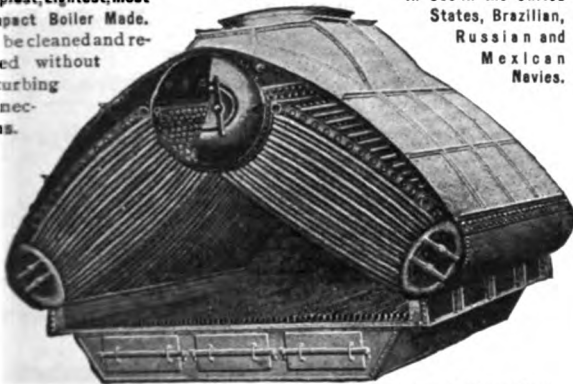
MAKERS TO THE BRITISH NAVY.

## THE MOSHER PATENT WATER TUBE BOILER,

Simplest, Lightest, most  
Compact Boiler Made.  
can be cleaned and re-  
tubed without  
disturbing  
connec-  
tions.

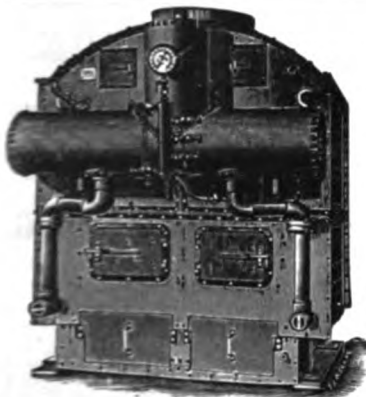
TYPE A.

In Use in the United  
States, Brazilian,  
Russian and  
Mexican  
Navies.



As many as forty tubes can be cleaned or renewed through a single hand hole; has greater steam and water capacity than any other water tube boiler. Send for descriptive catalogue.

MOSHER WATERTUBE BOILER CO., NO. 1 BROADWAY, N. Y.



## 250 STEAM VESSELS

Now Equipped With

## ALMY'S PATENT

### SECTIONAL

### Water Tube Boilers

Bear Evidence of Their

### Excellent Qualities

### Almy Water-Tube Boiler Co.

PROVIDENCE, R. I.

## Time and Distance Tables for Lake Ships

A set of tables showing the time required at different rates of speed, 8 to 15 miles an hour, to cover distances between all ports on the Great Lakes. A time saver to the vessel owner or vessel agent as well as captain or engineer. Send for it on approval.

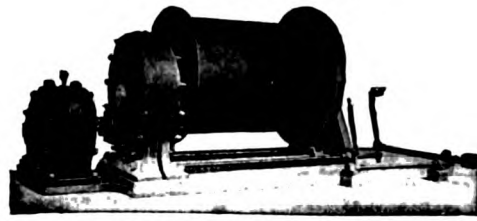
Price \$1.00

MARINE REVIEW

39-41 Wade Building,

Cleveland, Ohio

## Westinghouse Motors.



For All Power Purposes.

Westinghouse Electric & Mfg. Co.

Sales Offices in all Large Cities.

Pittsburgh, Pa.

For Canada: Canadian Westinghouse Co., Limited, Hamilton, Ontario.

## Taylor Water Tube Boiler Co.

322 Franklin St.,  
DETROIT, MICH.



Vertical Tubes,  
sectional, large  
steam space and  
liberating area.

Fire box, com-  
bustion chamber,  
and course for the  
furnace gases sim-  
ilar to the Scotch  
Marine.

Free circulation  
type.

Send for full description.

## The MARTIN-BARRISS CO.

IMPORTERS AND MANUFACTURERS OF

## MAHOGANY, WHITE MAHOGANY AND ALL NATIVE CABINET WOODS

High Grades of Kiln Dried Woods for Cabin Work and Inside Trim.

## White Oak Timbers and Plank

Constantly on Hand and Sawed to Order on Short Notice,

654 SENECA ST. CLEVELAND, O.

## CRANE VALVES

Questions and Answers for Marine Engineers.

By THEO. LUCAS.

Sent postpaid to any address for \$2.00.

Marine Review, 39-41 Wade Bldg. Cleveland, O.

CHARLES E. PECK.

WILLIAM A. PRIME.

**CHAS. E. & W. F. PECK,**

Insurance Brokers. Average Adjusters.

ESTABLISHED 1870.

NEW YORK, 58 William Street,  
 BUFFALO, 906 The Fidelity Bldg.  
 CLEVELAND, 1107-8 Williamson Bldg.  
 CHICAGO, 1115-16 Royal Insurance Bldg.

REPRESENTED BY

**C. T. BOWRING & CO., (Insurance) LTD.,**  
 5 and 6 Billiter Ave., LONDON,  
 and at "LLOYD'S" LONDON.

**HULLS and CARGOES.**

We place insurances in the most advantageous markets, employ-  
 ing, in the interest of our clients and with equal facility, all Foreign  
 and Home companies, at the best procurable rates and terms.

**We Represent Only the Assured.**

## The Only Standard American Classification of Shipping.



Has Authorized Agents in all the principal ports of the world to protect the interests of its patrons. Vessels built under its rules, or holding certificates of class in this Record of Shipping will, with their Cargoes, insure at lowest rates. Office, 66 Beaver Street, New York.

A. A. RAVEN, President.  
 W. H. H. MOORE, Treasurer.

W. R. T. JONES, Vice President,  
 W. IRVING COMES, Secretary.

**NEW HARBOR CHARTS OF THE LAKES.**

Following is a list of harbor charts recently issued from the United States Lake Survey Office, all in colors: Duluth and Superior Harbors, Two Harbors, Ashland, Marquette, Milwaukee, Chicago, Muskegon, Charlevoix, Michigan City, Toledo, Sandusky, Cleveland, Lorain, Fairport, Ashtabula, Conneaut, Erie, Dunkirk, Buffalo and Oswego.

For sale by THE MARINE REVIEW,

39-41 WADE BUILDING,

CLEVELAND, O.

**The Donnelly Salvage  
 and Wrecking Co., Ltd.,**

KINGSTON ONT.

**DIVERS, STEAM PUMPS, TUGS, Etc.**

SUPPLIED ON SHORTEST NOTICE.

JOHN DONNELLY, SR., Pres.  
 JOHN DONNELLY, JR., Vice-Pres.  
 H. B. FOLGER, Treas.  
 THOS. DONNELLY, Secy.

**GREAT LAKES REGISTER**FOR THE  
CLASSIFICATION OF STEEL AND WOODEN VESSELS.

Estb. 1828

Estb. 1896

COMBINED AND ISSUED IN CONNECTION WITH

**BUREAU VERITAS**

INTERNATIONAL REGISTER OF SHIPPING.

THE RATINGS OF GREAT LAKES REGISTER GO BEFORE AND ARE ACCEPTED BY THE LEADING UNDERWRITERS OF AMERICA AND EUROPE. VESSELS BUILT UNDER THE SUPERVISION OF ITS SURVEYORS WILL RECEIVE SPECIAL RATING, AND WILL ALSO BE PUBLISHED IN BUREAU VERITAS INTERNATIONAL REGISTER OF SHIPPING.

PLANS AND SPECIFICATIONS FURNISHED.

GREAT LAKES REGISTER SURVEYORS ARE ESTABLISHED AT ALL THE PRINCIPAL PORTS ON THE GREAT LAKES.

F. D. HERRIMAN, SURVEYOR GENERAL,  
 320-322 Perry-Payne Building, CLEVELAND, O.

**CRANE FITTINGS**

ESTABLISHED 1865.

**THE FRANKFORT Marine, Accident and Plate Glass INSURANCE CO.**

of FRANKFORT-ON-THE-MAIN, GERMANY.

Employers Teams and Public Liability, Elevator Insurance, Workmen's Collective, Individual Accident.

For the security of Policyholders in the United States of America, a deposit has been made in the States of Massachusetts and New York of \$400,000.00 in United States Bonds.

UNITED STATES DEPARTMENT.

100 WILLIAM ST., NEW YORK, N. Y.

F. G. VOSS, Manager and Attorney.

**I N S U R A N C E****GEO. L. McCURDY**

169 Jackson Boulevard

**CHICAGO ILLINOIS**

Direct Representative of Leading  
 American and Foreign Underwriters

**HULLS AND CARGOES**



Thirty Years' Experience building



## Engines and Propeller Wheels.

H. G. TROUT,  
King Iron Works,  
226 Ohio St.,  
BUFFALO, N. Y.



## SHERIFFS MANUFACTURING CO.

Manufacturers of  
PROPELLER  
WHEELS

Marine Engines  
and Repairs.

Milwaukee, Wis.  
Phone S. 163

## GEO. STRATFORD OAKUM CO.

JERSEY CITY, NEW JERSEY.

Established  
1860

Manufacturers  
of all grades of

## Oakum

Spun  
Cotton



FOR SALE AT SHIP CHANDLERS EVERYWHERE.

## AIDS TO NAVIGATION

are of vital importance to vessel interests.

## SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all vessel interests, because of the wide and unobstructed channel provided for navigation, enabling vessels to pass easily and rapidly through the draw.

## The SCHERZER ROLLING LIFT BRIDGE Co.,

Main Offices: 1616 Monadnock Block,  
CHICAGO, U. S. A.

## • • Buffalo • • Wrought Steel Ranges Are the Best.

Steamboat and Barge Ranges with Rotary Grates.  
No Cog Wheels to Warp or get out of order.

Don't take our word for it but ask some one using them.

**Russell & Watson,** General Steamboat Work  
BUFFALO, N. Y. Send for Catalogue.

AGENTS—Topy Bros., Ashtabula Harbor, Ohio.  
H. C. Weber & Co., Detroit, Mich.  
John Black, So. Chicago, Ill.  
Pritzlaff Bros., Milwaukee, Wis.

## Holzappel's Danboline and Lagoline Compositions

are made expressly for bunkers, holds, peaks and outsides of steel vessels. For prices and particulars apply to  
**JAMES NACEY, 208 Western Reserve Building,**  
AGENT FOR THE GREAT LAKES DISTRICT. Cleveland, O.  
Main office: Holzappel's American Compositions Co., 18 B'way, New York.

All of the latest and largest LAKE STEAMSHIPS are completely equipped with

## BLAKE

DUPLEX AND SIMPLEX SPECIAL MARINE PUMPS.  
New Marine Catalog ready about July 1st.

Geo. F. Blake Mfg. Co.  
114 Liberty St., :: :: :: NEW YORK CITY

THE IDEAL BOAT FOR YOUR VACATION AND ALL AROUND HARD USAGE.



"THE PRINCESS" 14 FEET LONG, 44 IN. BEAM, \$30.00. SALEM AIR CHAMBER EACH END.

## Mullins' Unsinkable Steel Boats.

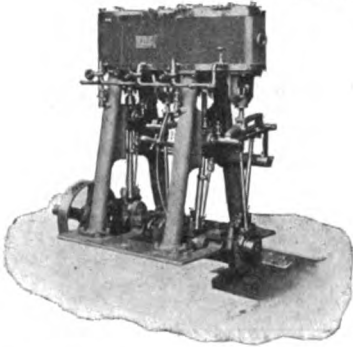
No repairs. Always dry and clean. Durable. Safe. Low cost. Endorsed very highly for livery and family use. Get copy of illustrated catalogue. Sent free on request.

W. H. MULLINS,  
545 Depot Street, Salem, Ohio.

## DON'T BUY GASOLINE ENGINES

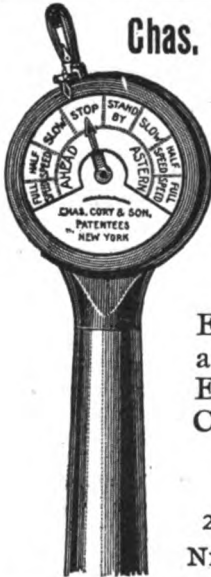
UNTIL YOU INVESTIGATE "THE MASTER WORKMAN." A two-cylinder gasoline engine superior to all one-cylinder engines. Costs less to buy and less to run. Quicker and easier started; has a wider sphere of usefulness. Has no vibration, can be mounted on any light wagon as a portable or traction. Weighs less than half of one-cylinder engines. Give size of engine required. Especially adapted for irrigation in connection with our centrifugal force pumps. (Sizes 2, 2½, 4, 5, 6, 8, 10, 12 and 16 Horse Power.) High-grade Gasoline Engines, 3 to 6 horse power—adapted for Electric Lighting, Marine and Pumping purposes. Mention this paper. Send for catalogue. THE TEMPLE PUMP CO., Maun, Meagher and 15th Streets, CHICAGO, ILL. This is our 50th year.

## John E. Thropp & Sons Co., TRENTON, N. J.



Builders of Single, Compound, Triple-Expansion and Direct Connected Engines.

Boiler Sectional Water Tube boilers and machinery complete for light draft Passenger Boats, Yachts, Tugs, Etc.



Chas. Cory & Son,

Manufacturers of  
Mechanical  
and  
Electrical  
Telegraphs  
and  
Indicators.

Engine Bells  
and  
Electric  
Call Bells.

278-279 Division St.  
NEW YORK CITY.

**A. J. MORSE & SON.**  
DIVING APPARATUS  
140  
CONGRESS ST. BOSTON.

ORAM FIX. ESTABLISHED 1860. J. W. FIX.  
**S. FIX'S SONS,**  
SUCCESSORS TO S. FIX & SON  
**Steam Flue Welding Works**  
Our Work Stands Government Test.  
Our Welds are Perfectly Smooth.  
Write us for Prices.  
COR. LEONARD  
AND WINTER STS. **Cleveland, O.**

## Dixon's Graphite Pipe Joint Compound

makes the tightest joints that remain free from rust and come apart easily at any time. Write for Booklet 77-D and a sample.

Joseph Dixon Crucible Co., Jersey City, N. J.

**WATER  
FILTERS  
REGULATORS  
& ENGINES**

We make Pressure Regulating Valves for all purposes, steam or water.

Our Feed-Water Filter will keep oil out of your boiler.

We can interest you if you use a condenser.

Water Engines for Pumping Organs



**THE ROSS VALVE CO. TROY N. Y.**

Keep Oil out of your Boiler with the  
**FEED-WATER FILTER**  
For Marine and Land Service  
Two of these Filters are  
in use on the Oceanic.

## LUNKENHEIMER



A valve with self-cleansing, renewable seat and reversible double-faced disc. No scale or sediment can lodge on its seat. Easily taken apart, all parts renewable. Made in screw ends, flange ends, screw and flange ends, in 1 1/4, 1 1/2, 2, 2 1/2, 3-inch sizes. Specify *Lunkenheimer Duro* and order from your dealer. Write for catalog.

**THE LUNKENHEIMER COMPANY**

Largest Manufacturers of  
Engineering Specialties in the World  
CINCINNATI, OHIO, U. S. A.

**"DURO" BLOW-OFF VALVE**

## LEBANON CHAIN WORKS,

LEBANON PA.

Manufacturers of HAND MADE CHAINS of all grades.  
**SHIPS' CABLES, DREDGE CHAINS, CRANE CHAINS, BLOCK CHAINS.**  
Large chains furnished side or end welded. High grade tested chains a specialty.  
We manufacture our own iron. We are licensed testers for Lloyds Association, American Bureau of Shipping and Bureau Veritas.

## Hand Book of Admiralty Law

By ROBT. M. HUGHES.

\$3.75.

Marine Review,

Cleveland, O.

John D. Gilchrist, Pres. John Marron, Sec'y.  
John A. Flajole, Gen'l Mgr.

**THE FOREST CITY BOILER CO.**

Marine Work a Specialty.

264 Merwin St.

Tel. Main 1886

CLEVELAND, OHIO.

**STEEL SHIPS: Their Construction and Maintenance**

A manual for ship builders, ship superintendents, students and marine engineers.

By THOMAS WALTON.

Price \$5.50.

The Marine Review, Cleveland, O.

## RITCHIE LIQUID COMPASS



The Standard Liquid Compass  
Used Exclusively by the United  
States Navy For Over  
35 Years.

Over 25,000 Used in Mer-  
chant Service.

Made in all sizes and  
styles, from 2 to 12 inches  
diameter of card. All com-  
passes made by us have  
our name printed below  
the North point, or promi-  
nently upon the card.  
**NONE OTHER  
ARE GENUINE.**  
Latest form with four or  
For sale by ship chandlers

six needles, the best instrument for iron ships,  
and nautical instrument dealers.

CATALOGUE FREE.

### E. S. RITCHIE & SONS,

Manufacturers of Nautical and Physical Apparatus,  
BROOKLINE, MASS., U. S. A.

### Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.

Lighter Carrying Different  
Grades at all Times.



Fuel Scow with elevators and discharging spouts. Storage of 800 tons.  
Discharges 250 tons an hour into steamers while unloading cargo.

**M. A. Hanna & Co., Miners and Shippers.**

Main Office, Perry-Payne Bldg., Cleveland.

## STEAMBOAT FUEL

at TOLEDO and HURON.

### IRONVILLE DOCK & COAL CO.,

429 Spitzer Building, Toledo, Ohio.

Office, Main 1513. : : : Bell Phones : : : Dock, East 63.

Coal of Best Quality MASSILLON & PITTSBURG No. 8.



IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT.  
COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.

J. B. COWLE, Pres.

W. E. PERKINS, Sec'y and Treas  
MAT. THOMAS, Gen'l Mgr.

## The Union Machine & Boiler Company,

MACHINISTS, FOUNDERS AND BOILER MAKERS.

Jobbing solicited. Steel vessel repairs promptly attended to night or day.

108 TO 114 RIVER STREET. CLEVELAND, O.

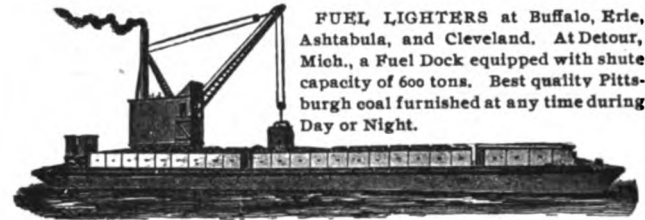
Phones: Bell Main 609. Cuy. A. 711. Night Call Cuy. M. 1843.

### HOISTING ENGINES.

We build them in all sizes from new and improved designs. Every engine thoroughly tested before leaving our shop, and guaranteed to be satisfactory in every case. When in want of a hoist for marine work, dock work, mining, or any other purpose, kindly permit us to name you prices. We know we can please you.

MARINE IRON CO., - - - Bay City, Mich.

## PICKANDS, MATHER & CO.,



FUEL LIGHTERS at Buffalo, Erie,  
Ashtabula, and Cleveland. At Detour,  
Mich., a Fuel Dock equipped with shute  
capacity of 600 tons. Best quality Pitts-  
burgh coal furnished at any time during  
Day or Night.

Western Reserve Building, CLEVELAND, O.

## HAWKINS' WORKS FOR ENGINEERS.

Most popular among young men in the engine departments of ships is  
"Engineers' Examinations with Questions and Answers." It sells at  
\$2 and the same is the cost, delivered, of the following works:

Hawkins' New Catechism of Electricity.

Hawkins' Maxims and Instructions for the Boiler Room.

Hawkins' Hand Book of Calculations for Engineers.

Hawkins' New Catechism of the Steam Engine.

THE MARINE REVIEW, CLEVELAND, O.

## De Grauw, Aymar & Company.

ESTABLISHED 1827.

**Cordage, Oakum, Vessel  
and Railroad Supplies.**

SOLE MANUFACTURERS IN THE UNITED  
STATES FOR  
**TYZACK'S STOCKLESS ANCHORS.**  
NEW YORK CITY.

BETTER and More ECONOMICAL than DRILLED BOLTS



FALLS HOLLOW BOLTS are self-inspectors. Afford protection against  
explosions. Are of uniform strength and flexibility. Hole is central, admits  
air, which aids combustion. Superior quality guaranteed. Samples of either  
Hollow or Solid furnished on application. Ask for our latest price list.



## VESSEL AND INSURANCE AGENTS.

**T. R. MCCARTHY,**  
*Steamship and Freight Broker,*  
*Chartering, Forwarding and General Com-*  
*mission Agent; and Broker for the Sale,*  
*Purchase and Construction of Steam-*  
*ers and Sailing Vessels.*  
*Marine and Fire Insurance Effected.*  
 Cable Address, "Macarthy, Montreal."  
 (Watkins', Scott's Liebers and A. B. C.  
 Codes Used.)  
*Shipping Agent to The Asbestos & Asbestic*  
*Co., Ltd., of Danville, Que., and The Belgo*  
*Pulp & Paper Co., Shawinigan Falls, Que.*  
 404 Board of Trade Bldg., MONTREAL, CAN.  
*Correspondence Invited and Agencies Solicited.*

**S. S. LESTER,**  
*Steamship Agent and Freight Broker.*  
 Manager Steamer  
**ST. LAWRENCE,**  
 83 Dalhousie St. QUEBEC, QUE.

*Insurance.*  
**PRINDIVILLE & COMPANY,**  
*Average Adjusters.*  
*Insurance Brokers.*  
 12 Sherman Street,  
 CHICAGO.  
*Representing:*  
 Johnson & Higgins, New York.  
*Represented by:*  
 Willis Faber & Co., Ltd., London.  
 Jno. D. Tyson & Co., Liverpool.

**P. H. FLEMING & CO.**  
*Insurance and Vessel Agents.*  
*Marine, Fire, Ocean, Liability.*  
 Telephone, Harrison 1859.  
 No. 2 Sherman St., CHICAGO, ILL.

C. W. Elphicke. J. J. Rardon. M. C. Reuter.  
**C. W. ELPHICKE & CO.**  
*Vessel and Insurance Agents.*  
 No. 6 Sherman St., CHICAGO, ILL.  
 Telephone, Harrison 1194.

D. Sullivan. F. J. Sullivan.  
**D. SULLIVAN & CO.**  
*Vessel Agents.*  
*Marine Insurance.*  
 2-4 Sherman St., CHICAGO, ILL.  
 Office Tel., Harrison 2847. Res. Ashland 2488.

W. A. Hawgood. Arthur H. Hawgood.  
**W. A. HAWGOOD & CO.**  
*Vessel and Insurance Agents.*  
 220-21 Perry-Payne Bldg., Cleveland, O.  
 Telephones: { Office, Main 2895.  
 { Res. W. A. Hawgood, Doan 84-J.  
 { Res. A. H. Hawgood, Doan 841-J.

J. Mitchell. J. F. Wedow. A. Mitchell.  
**MITCHELL & CO.**  
*Vessel and Insurance Agents.*  
 508-10 Perry-Payne Bldg., Cleveland, O.  
 Office Tel. M. 787. Res. John Mitchell, Doan 841.  
 John F. Wedow, Doan 141-J.  
 Alfred Mitchell, Doan 218

## VESSEL AND INSURANCE AGENTS.

C. L. Hutchinson. W. H. McGean.  
**HUTCHINSON & CO.**  
*Vessel and Insurance Agents.*  
 { Office, Main 2453.  
 { Res. C. L. Hutchinson, Ridge 845 L.  
 { Res. W. H. McGean, East 1421-J.  
 313-15 Perry-Payne Bldg., Cleveland, O.

**W. C. RICHARDSON,**  
*Vessel Owner and Broker and*  
*Marine Insurance Agent.*  
 420-421 Perry Payne Building,  
 CLEVELAND, O.  
 Office Tel., 838. Residence Tel., 2938.

**C. P. GILCHRIST & CO.**  
*Vessel and Insurance Agents.*  
*Sale and Exchange of Vessels a Specialty.*  
*Lumber and Coal Chartering.*  
 Full Telephone Service, Office and Residence.  
 (Local and Long Distance.)  
 411 Perry-Payne Bldg., Cleveland, O.

John B. Hall. Harry B. Root.  
**HALL & ROOT,**  
*Vessel Agents.*  
 21-22 Exchange Bldg., 202 Main St.,  
 Telephone, Seneca 892. BUFFALO, N. Y.

**JOHN J. BOLAND,**  
*Vessel and Insurance Agent.*  
 25-26 Exchange Bldg., 202 Main St.,  
 Telephone, Seneca 115. BUFFALO, N. Y.

**PARKER BROS. CO., LTD.,**  
*Vessel, Marine Insurance and Wreck-*  
*ing Agents. Marine Surveyors.*  
 Office Tel. Main 5814. Night: Main 290.  
 Night: Grand 1723 J.  
 15 Atwater St. West, DETROIT, MICH.

**D. T. HELM & CO.**  
*Vessel and Insurance Agents.*  
 Telephones—Office 263.  
 Res. 331-8.  
 DULUTH, - - - MINN.

**SAMUEL HOLMES,**  
*Steamship Offices,*  
*For Selling, Chartering and Building all*  
*Classes Steam Vessels*  
*Steam Vessel Circulars*  
*Weekly Freight Circulars*  
 Morris Bldg, 66-8 Broad St., New York.

## PROCTORS IN ADMIRALTY.

**WILLIAM H. FAUST,**  
 Lieutenant United States Navy, (ret.)  
*Counselor and Proctor in Admiralty.*  
 Room 344 Federal Building,  
 BUFFALO, N. Y.

**C. E. KREMER,**  
*Counselor at Law and*  
*Proctor in Admiralty.*  
 Suite 821-822 New York Life Bldg.,  
 CHICAGO, ILL.

**HOYT, DUSTIN & KELLEY,**  
*Lawyers and Proctors in Admiralty.*  
 Offices, 702 Western Reserve Building,  
 CLEVELAND, O.

**WHITE, JOHNSON,**  
**MCCASLIN & CANNON,**  
*Attorneys-at-Law and*  
*Proctors in Admiralty.*  
 Williamson Bldg, CLEVELAND, O.

**GOULDER, HOLDING &**  
**MASTEN,**  
*Law Offices.*  
 H. D. Goulder. S. H. Holding. F. S. Masten.  
 Perry Payne Building,  
 CLEVELAND, O.

**ALBERT J. GILCHRIST,**  
*Proctor in Admiralty.*  
 604 Perry Payne Building,  
 CLEVELAND, O.

**HAND BOOK**  
 OF  
**ADMIRALTY LAW,**  
 by

ROBT. M. HUGHES,

Price, \$3.75

THE PENTON PUB. CO.,  
 Cleveland, O.

**MARINE INSURANCE,**  
 by  
**WILLIAM GOW.**  
 Price, \$1.50  
 THE PENTON PUB. CO.,  
 Cleveland, O.

## PROCTORS IN ADMIRALTY.

Geo. S. Potter. Meredith Potter.  
**POTTER & POTTER,**  
*Lawyers and Proctors in Admiralty.*  
 35-36 Dun Building, 110 Pearl Street,  
 BUFFALO, N. Y.

**RAY G. MacDONALD,**  
*Attorney-at-Law and  
 Proctor in Admiralty.*  
 630 First National Bank Building,  
 Telephone, Central 3507  
 Automatic 8085 CHICAGO, ILL.

**SHAW, WARREN, CADY &  
 OAKES,**  
*Attorneys-at-Law.*  
 904 to 907 Union Trust Building,  
 Telephone, 625. DETROIT, MICH.

**NAVAL ARCHITECTURE,**  
 by  
**THOS. H. WATSON.**  
 A manual on laying off iron and steel ves-  
 sels. Valuable for naval architects as well as  
 beginners in ship yards.  
 Price, \$5.00  
 Order from  
 THE PENTON PUB. CO.,  
 Cleveland, O.

## PROFESSIONAL.

**W. J. WOOD,**  
*Naval Architect, Consulting Engineer.*

Prepares designs or working drawings and  
 specifications for all classes of vessels and  
 superintends construction and repairs. Sur-  
 veys damaged property and estimates cost of  
 repairs. Arbitrator and court expert.

**FIRE BOATS A SPECIALTY.**  
 Complete Plans furnished for Steel, Compo-  
 site or Wooden Vessels.  
 709 Rialto Building, CHICAGO.  
 Tel. Harrison 1020.

**HENRY RICE and  
 H. O. LOVEJOY,**  
*Naval Architects.  
 Consulting Engineers.*

Surveyors of Wood and Steel Ships, Engines  
 and Boilers. Estimates of cost given. Super-  
 intendence of building and repairing. Plans  
 and specifications furnished for all classes  
 of ships.

Lines and models furnished.  
 Room 18,  
 202 Main Street., BUFFALO, N. Y.

**JOSEPH KIDD,**  
*Marine Architect and Surveyor.  
 Consulting Ship Builder and Engineer*

Over thirty years' experience. Specifica-  
 tions, designs and estimates. Superintendence  
 of construction and repairs. Damage and  
 other surveys carefully attended to. Nego-  
 tiations for the building, charter or sale of all  
 kinds of vessels and machinery.

610 Board of Trade,  
 DULUTH, MINN.

**ROBERT W. HUNT & CO.,**  
*Bureau of Inspection.  
 Tests and Consultation.*

1121 The Rookery, CHICAGO.  
 Monong. Bank Bldg., PITTSBURG.  
 66 Broadway, NEW YORK.

Inspectors of shipbuilding material and  
 machinery. Inspectors of all materials. Duty  
 tests of engines and boilers. Physical and  
 chemical laboratories.

**AMBROSE V. POWELL,**  
 Member American Society Civil Engineers  
*Civil Engineer*  
 Designs and Constructs Dry Docks, Harbor  
 Works, Docks, and Plant for Handling Coal  
 and Ore, Foundations  
 Office, 1008 Chamber of Commerce,  
 CHICAGO, ILL.

## PROFESSIONAL.

H. Matteson, Jr. Geo. B. Drake.  
**MATTESON & DRAKE,**

*Naval Architects and  
 Consulting Engineers.*

Designing and Superintendence of building  
 and repairing steel and wooden vessels.

Bulk oil vessels a specialty.

Agents for marine specialties.

706-707 Bourse, PHILADELPHIA.

**ADAM STEEL, JAS. NACEY,  
 ALEXANDER HYND,**  
*Marine Architects.  
 Mechanical Draughtsmen.  
 Consulting Engineers.*

Specifications and designs for all descrip-  
 tions of marine vessels, engines and boilers.  
 Supervision of construction and repairs. Da-  
 mage and other surveys carefully attended to.

208-9 Western Reserve Building,  
 CLEVELAND, O.

Phone, Main 3330 J.

**PITTSBURGH TESTING  
 LABORATORY, Ltd.,**  
*Inspecting and Metallurgical  
 Engineers and Chemists.*

Inspectors of shipbuilding materials and  
 machinery. Inspectors located at all mills.  
 Physical and chemical laboratories. Tests  
 of all kinds.

1750 Monadnock, CHICAGO.  
 235 Water Street, PITTSBURG.

906-7 Crozier Building, Philadelphia,  
 New York City, 60 New Street,  
 Richmond, Va., 1107 1/2 Main Street.

Members Maritime Association Port of N. Y.  
**SADLER, PERKINS  
 & FIELD,**  
*Naval Architects and Engineers.  
 Chartering and Brokerage.*  
 Maritime Bldg., New York.  
 NEW YORK. DETROIT.

**NAVAL ARCHITECTS' AND  
 ENGINEERS' DATA BOOK,**  
 By T. H. WATSON.  
 Price, \$1.50  
 THE PENTON PUB. CO.,  
 Cleveland, O.

**COMPASS ADJUSTER.**  
**CAPT. J. M. FIELDS**  
 INVENTOR OF AND AGENT FOR  
*Field's Patent Course Finder.*  
 The Bethel, - CLEVELAND, O.

# Buyers' Directory of the Marine Trade

For a more complete classification than that represented by advertisers in the Marine Review, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by the Marine Review, 39-41 Wade Bldg., Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

**AIR COMPRESSORS, AIR HOISTS, ETC.**  
Dake Engine Co. ....Grand Haven, Mich.  
Great Lakes Engineering Works. ....Detroit.  
Mietz, Aug. ....New York.

**AIR PORTS, DEAD LIGHTS, ETC.**  
Marine Mfg. & Supply Co. ....New York.

**AIR PUMPS AND APPLIANCES.**  
Fore River Ship & Engine Co. ....Quincy, Mass.  
Great Lakes Engineering Works. ....Detroit.

**ANCHORS.**  
Baldt Anchor Co. ....Chester, Pa.  
Bowers, L. M. & Co. ....Binghamton, N. Y.  
DeGrauw, Aymar & Co. ....New York.  
Seaboard Steel Casting Co. ....Chester, Pa.

**ANTI-FOULING AND ANTI-CORROSIVE COMPOSITION FOR STEEL VESSELS.**  
Holzapfel's American Composition Co. ....New York.

**ANTI-FRICTION METALS.**  
Cramp, Wm. & Sons. ....Philadelphia.  
Phosphor Bronze Smelting Co., Ltd. ....Philadelphia.  
Victor Metals Co. ....Braintree, Mass.

**ARTIFICIAL DRAFT FOR BOILERS.**  
American Ship Building Co. ....Cleveland.  
Detroit Ship Building Co. ....Detroit.  
Great Lakes Engineering Works. ....Detroit.  
Sturtevant, B. F., Co. ....Hyde Park, Mass.

**ASH EJECTORS.**  
Great Lakes Engineering Works. ....Detroit.

**ATTORNEYS AND PROCTORS IN ADMIRALTY.**

Faust, Lieut. Wm. H. ....Buffalo.  
Gilchrist, Albert J. ....Cleveland.  
Gould, Holding & Masten. ....Cleveland.  
Hoyt, Dustin & Kelley. ....Cleveland.  
Kremer, C. E. ....Chicago.  
MacDonald, Ray G. ....Chicago.  
Potter & Potter. ....Buffalo.  
Shaw, Warren, Cady & Oakes. ....Detroit.  
White, Johnson, McCaslin & Cannon. ....Cleveland.

**BAROMETERS, MARINE GLASSES, ETC.**  
Ritchie, E. S. & Sons. ....Brookline, Mass.

**BELTING, RUBBER.**  
New York Belting & Packing Co. ....New York.

**BLOCKS, SHEAVES, ETC.**  
Boston & Lockport Block Co. ....Boston, Mass.  
Cleveland Block Co. ....Cleveland.

**BLOWERS.**  
Sturtevant, B. F. Co. ....Hyde Park, Mass.

**BOAT BUILDERS.**  
Drem, Thos. & Son. ....Wilmington, Del.  
Kahnweiler's Sons, David. ....New York.  
Lane & DeGroot. ....Long Island City, N. Y.  
Marine Construction & D. D. Co. ....  
.....Mariner's Harbor, S. I., N. Y.  
Truscott Boat Mfg. Co. ....St. Joseph, Mich.  
Willard, Chas. P. & Co. ....Chicago.

**BOILER MANUFACTURERS.**  
Almy Water Tube Boiler Co. ....Providence, R. I.  
American Ship Building Co. ....Cleveland.  
Atlantic Works. ....East Boston, Mass.  
Babcock & Wilcox Co. ....New York.  
Bertram Engine Works Co., Ltd. ....  
.....Toronto, Can.  
Chicago Ship Building Co. ....Chicago.  
Cramp, Wm. & Sons. ....Philadelphia.  
Delauney, Belleville & Co. ....St. Denis, France.  
Detroit Ship Building Co. ....Detroit.  
Fletcher, W. A. & Co. ....Hoboken, N. J.  
Fore River Ship & Engine Co. ....Quincy, Mass.  
Forest City Boiler Co. ....Cleveland.  
Georgian Bay Engineering Works. ....  
.....Midland, Ont.  
Gogebic Steam Boiler Works. ....Duluth, Minn.  
Great Lakes Engineering Works. ....Detroit.

**BOILER MANUFACTURERS—Continued.**  
Tenks Ship Building Co. ....Port Huron, Mich.  
Kingsford Foundry & Machine Works. ....  
.....Oswego, N. Y.  
Milwaukee Dry Dock Co. ....Milwaukee.  
Mosher Water Tube Boiler Co. ....New York.  
Newport News Ship Building Co. ....  
.....Newport News, Va.  
Northwestern Steam Boiler & Mfg. Co. ....  
.....Duluth, Minn.  
Roberts Safety Water Tube Boiler Co. ....  
.....New York.  
Stirling, The Co. ....Chicago.  
Superior Ship Building Co. ....Superior, Wis.  
Taylor Water Tube Boiler Co. ....Detroit.  
Union Machine & Boiler Co. ....Cleveland.  
United States Ship Building Co. ....New York.  
Willard, Chas. P. & Co. ....Chicago.

**BOILER COMPOUNDS.**  
Dearborn Drug & Chemical Works. ....Chicago.

**BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.**  
Falls Hollow Staybolt Co. ....Cuyahoga Falls, O.

**BRASS AND BRONZE CASTINGS.**  
Cramp, Wm. & Sons. ....Philadelphia.  
Fore River Ship & Engine Co. ....Quincy, Mass.  
Great Lakes Engineering Works. ....Detroit.  
Lunkenheimer Co. ....Cincinnati.  
Macbeth Iron Co. ....Cleveland.  
Phosphor Bronze Smelting Co. ....Philadelphia.  
Victor Metals Co. ....Braintree, Mass.

**BRIDGES, BUILDERS OF.**  
Scherzer Rolling Lift Bridge Co. ....Chicago.

**BUCKETS, ORE AND COAL.**  
Brown Hoisting & Conveying Machine Co. ....  
.....Cleveland.  
Forest City Boiler Co. ....Cleveland.  
Macbeth Iron Co. ....Cleveland.

**CABIN AND CABINET FINISHING WOODS.**  
Martin-Barriss Co. ....Cleveland.

**CAPSTANS.**  
American Ship Windlass Co. ....Providence, R. I.  
Hyde Windlass Co. ....Bath, Me.  
Marine Mfg. & Supply Co. ....New York.

**CEMENT, IRON FOR REPAIRING LEAKS.**  
Smooth-On Mfg. Co. ....Jersey City, N. J.

**CHAINS.**  
Lebanon Chain Works. ....Lebanon, Pa.

**CHAIN HOISTS.**  
Boston & Lockport Block Co. ....Boston, Mass.  
Dake Engine Co. ....Grand Haven, Mich.

**CHARTS.**  
Marine Review Pub. Co. ....Cleveland.  
Potter, J. D. ....London.

**CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.**  
Ashton Valve Co. ....Boston.  
Ritchie, E. S. & Sons. ....Brookline, Mass.  
Standard Gauge Mfg. Co. ....Syracuse, N. Y.

**COAL PRODUCERS AND SHIPPERS.**  
Hanna, M. A. & Co. ....Cleveland.  
Pickands, Mather & Co. ....Cleveland.  
Pittsburg Coal Co. ....Cleveland.

**COAL AND ORE HANDLING MACHINERY.**  
Brown Hoisting Machinery Co. (Inc.) ..  
.....Cleveland.  
Macbeth Iron Co. ....Cleveland.

**COMPASS ADJUSTERS.**  
Fields, Capt. J. M. ....Cleveland.

**COMPASSES.**  
Ritchie, E. S. & Sons. ....Brookline, Mass.

**COMPOSITIONS FOR SHIP'S BOTTOMS.**  
Holzapfel's American Compositions Co. ....New York.

**CONCRETE MIXERS.**  
Contractors Supply & Equipment Co. ....Chicago.

**CONDENSORS.**  
Great Lakes Engineering Works. ....Detroit.  
Thropp & Sons Co., John E. ....Trenton, N. J.

**CONTRACTORS SUPPLIES.**  
Contractors Supply & Equipment Co., Chicago.

**CONTRACTORS FOR PUBLIC WORKS.**  
Buffalo Dredging Co. ....Buffalo.  
Chicago & Gt. Lakes Dredge & Dock Co. ....  
.....Chicago.  
Dunbar & Sullivan Dredging Co. ....Buffalo.  
Fitz-Simons & Connell Co. ....Chicago.  
Hickler Bros. ....Sault Ste. Marie, Mich.  
Lake Superior Contracting & Dredging Co. ....  
.....Duluth, Minn.  
Smith Co., L. P. & J. A. ....Cleveland.  
Starke Dredge & Dock Co., C. H. ....Milwaukee.  
Sullivan, M. ....Detroit.

**CORDAGE.**  
Baker & Co., H. H. ....Buffalo.  
DeGrauw, Aymar & Co. ....New York.  
Upson-Walton Co. ....Cleveland.

**CORK JACKETS AND RINGS.**  
Armstrong Cork Co. ....Pittsburg, Pa.  
Kahnweiler's Sons, D. ....New York.

**COURSE FINDER.**  
Field's Patent Course Finder. ....Cleveland.

**CHAIN CONVEYORS, HOISTS.**  
Brown Hoisting Machinery Co. (Inc.) ....  
.....Cleveland.  
General Electric Co. ....Schenectady, N. Y.  
Westinghouse Electric & Mfg. Co. ....  
.....Pittsburg, Pa.

**CRANES, TRAVELING.**  
Brown Hoisting Machinery Co. ....Cleveland.  
Pawling & Harnischfeger. ....Milwaukee.

**DIVING APPARATUS.**  
Morse, A. J. & Son. ....Boston.  
Schrader's Son, A. ....New York.

**DREDGING CONTRACTORS.**  
Buffalo Dredging Co. ....Buffalo.  
Chicago & Gt. Lakes Dredge & Dock Co. ....  
.....Chicago.  
Dunbar & Sullivan Dredging Co. ....Buffalo.  
Fitz-Simons & Connell Co. ....Chicago.  
Hickler Bros. ....Sault Ste. Marie, Mich.  
Lake Superior Contracting & Dredging Co. ....  
.....Duluth, Minn.  
Smith Co., L. P. & J. A. ....Cleveland.  
Starke Dredge & Dock Co., C. H. ....Milwaukee.  
Sullivan, M. ....Detroit.

**DRYING APPARATUS.**  
Bayley & Sons Co., Wm. ....Milwaukee, Wis.  
Sturtevant, B. F., Co. ....Hyde Park, Mass.

**DRY DOCKS.**  
American Ship Building Co. ....Cleveland.  
Atlantic Works. ....East Boston, Mass.  
Buffalo Dry Dock Co. ....Buffalo.  
Chicago Ship Building Co. ....Chicago.  
Craig Ship Building Co. ....Toledo, O.  
Cramp, Wm. & Sons. ....Philadelphia.  
Detroit Ship Building Co. ....Detroit.  
Great Lakes Engineering Works. ....Detroit.  
Lockwood Mfg. Co. ....East Boston, Mass.  
Manitowoc Dry Dock Co. ....Manitowoc, Wis.  
Milwaukee Dry Dock Co. ....Milwaukee.  
Newport News Ship Building Co. ....  
.....Newport News, Va.  
Shipowners Dry Dock Co. ....Chicago.  
Superior Ship Building Co. ....Superior, Wis.  
United States Ship Building Co. ....New York.



## Buyers' Directory of the Marine Trade.—Continued.

**ELECTRIC HOISTS AND CRANES.**

Fisher Electrical Works.....Detroit.  
General Electric Co.....Schenectady, N. Y.  
Pawling & Harnischfeger.....Milwaukee.  
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**ELECTRIC LIGHT AND POWER PLANTS.**

Fisher Electrical Works.....Detroit.  
General Electric Co.....Schenectady, N. Y.  
Metz, Aug.....New York.  
Sturtevant, B. F. Co.....Hyde Park, Mass.  
Knapp & Sons, John E.....Trenton, N. J.  
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**ENGINE BUILDERS, MARINE.**

American Ship Building Co.....Cleveland.  
Atlantic Works.....East Boston, Mass.  
Bertram Engine Works Co., Ltd.....Toronto, Can.  
Chicago Ship Building Co.....Chicago.  
Chase Machine Co.....Cleveland.  
Clump, Wm. & Sons.....Philadelphia.  
Craig Ship Building Co.....Toledo, O.  
Lake Engine Co.....Grand Haven, Mich.  
Detroit Ship Building Co.....Detroit.  
Fletcher, W. & A. Co.....Hoboken, N. J.  
Fire River Ship & Engine Co.....Quincy, Mass.  
Great Lakes Engineering Works.....Detroit, Mich.  
Hall Bros.....Philadelphia.  
Jones Ship Building Co.....Port Huron, Mich.  
Lockwood Mfg. Co.....East Boston, Mass.  
Macbeth Iron Co.....Cleveland.  
Metz, Aug.....New York.  
Milwaukee Dry Dock Co.....Milwaukee.  
Moser, Chas. D.....New York.  
Nelson Steering Engine Co.....New York.  
Newport News Ship Building Co.....Newport News, Va.  
Northwestern Steam Boiler & Mfg. Co.....Duluth, Minn.  
Pack's Ship Yard.....Chestertown, Pa.  
Sierffs Mfg. Co.....Milwaukee.  
Superior Ship Building Co.....Superior, Wis.  
Thompson, J. E. & Sons Co.....Trenton, N. J.  
Trott, H. G.....Buffalo.  
United States Ship Building Co.....New York.  
Willard, Chas. P. & Co.....Chicago.

**ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.**

Gray, Chas. & Son.....New York.  
Machine Mfg. Supply Co.....New York.

**ENGINEERING SPECIALTIES AND SUPPLIES.**

Crane Co.....Chicago.  
Kearney & Mueller.....New York.  
Lunkenheimer Co.....Cincinnati.  
New York Belting & Packing Co.....New York.  
Northwestern Steam Boiler & Mfg. Co.....Duluth, Minn.

**ENGINEERS, MARINE, MECHANICAL, CONSULTING.**

Hynd, Alexander.....Cleveland.  
Hunt, Robt. W. & Co.....Chicago.  
Kidd, Joseph.....Duluth, Minn.  
Loveroy, H. O.....Buffalo.  
Matson & Drake.....Philadelphia.  
Mossner, Chas. D.....New York.  
Nacey, James.....Cleveland.  
Pittsburg Testing Laboratory, Ltd.....Pittsburg.  
Rice, Henry.....Buffalo.  
Roelker, H. B.....New York.  
Sutler, Perkins & Field.....New York.  
Steel, Adam.....Cleveland.  
Wood, W. J.....Chicago.

**FANS FOR VENTILATION, EXHAUST, ETC.**

Sturtevant, B. F. Co.....Hyde Park, Mass.

**FEED WATER PURIFIERS AND HEATERS.**

Koss Valve Co.....Troy, N. Y.

**FIXTURES FOR LAMPS, OIL OR ELECTRIC.**

General Electric Co.....Schenectady, N. Y.  
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**FORGES.**

Sturtevant, B. F. Co.....Boston.

**FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.**

Cleveland City Forge & Iron Co.....Cleveland.  
Fire River Ship & Engine Co.....Quincy, Mass.  
Macbeth Iron Co.....Cleveland.

**FLUE WELDING.**

Fix's, S. Sons.....Cleveland.

**FUEL ECONOMIZERS.**

Sturtevant Co., B. F.....Hyde Park, Mass.

**FUELING COMPANIES AND COAL DEALERS.**

Hanna, M. A. & Co.....Cleveland.  
Ironville, Dock & Coal Co.....Toledo, O.  
Parker Bros. Co., Ltd.....Detroit.  
Picklands, Mather & Co.....Cleveland.  
Pittsburg Coal Co.....Cleveland.  
Smith, Stanley B., & Co.....Detroit.  
Smith Coal & Dock Co., Stanley B. Toledo, O.

**FURNACES FOR BOILERS.**

Continental Iron Works.....New York.

**GASKETS, RUBBER.**

New York Belting & Packing Co.....New York.

**GAS BUOYS.**

Safety Car Heating & Lighting Co.....New York.

**GAS AND GASOLINE ENGINES.**

Chase Machine Co.....Cleveland.  
Georgian Bay Engineering Works.....Midland, Ont.  
Reliance Mfg. Co.....City Island, New York.  
Temple Pump Co.....Chicago.

**GAUGES, STEAM AND VACUUM.**

American Steam Gauge & Valve Mfg. Co.....Boston.  
Ashton Valve Co.....Boston.  
Lunkenheimer Co.....Cincinnati.  
Standard Gauge Mfg. Co.....Syracuse, N. Y.

**GAUGES, WATER.**

Bonner & Co., Wm. T.....Boston.  
Lunkenheimer Co.....Cincinnati, O.  
Standard Gauge Mfg. Co.....Syracuse, N. Y.

**GRAPHITE.**

Dixon Crucible Co., Joseph.....Jersey City, N. J.

**HAMMERS, STEAM.**

Chase Machine Co.....Cleveland.

**HEATING APPARATUS.**

Sturtevant, B. F. Co.....Hyde Park, Mass.

**HOISTS FOR CARGO, ETC.**

American Ship Building Co.....Cleveland.  
Brown Hoisting Machinery Co. (Inc.).....Cleveland.  
Chase Machine Co.....Cleveland.  
General Electric Co.....New York.  
Georgian Bay Engineering Works.....Midland, Ont.  
Hyde Windlass Co.....Bath, Me.  
Marine Iron Co.....Bay City.  
Mietz, Aug.....New York.  
Pawling & Harnischfeger.....Milwaukee.  
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**HOLLOW STAYBOLT IRON.**

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

**HOSE, RUBBER.**

New York Belting & Packing Co.....New York.

**HYDRAULIC DREDGES.**

Great Lakes Engineering Works.....Detroit.

**HYDRAULIC TOOLS.**

Watson-Stillman Co., The.....New York.

**ICE MACHINERY.**

Great Lakes Engineering Works.....Detroit.  
Roelker, H. B.....New York.

**INDICATORS FOR STEAM ENGINES.**

American Steam Gauge Co.....Boston.  
Ashton Valve Co.....Boston.

**INJECTORS.**

American Injector Co.....Detroit.  
Crane Co.....Chicago.  
Jenkins Bros.....New York.  
Lunkenheimer Co.....Cincinnati.  
Penberthy Injector Co.....Detroit, Mich.

**INSURANCE, MARINE.**

Elphicke, C. W. & Co.....Chicago.  
Fleming & Co., P. H.....Chicago.  
Frankfort Marine, A. & P. G. Ins. Co.....New York.

**INSURANCE, MARINE—Continued.**

Gilchrist & Co., C. P.....Cleveland.  
Hawgood & Co., W. A.....Cleveland.  
Helm & Co., D. T.....Duluth.  
Hutchinson & Co.....Cleveland.  
McCarthy, T. R.....Montreal.  
McCurdy, Geo. L.....Chicago.  
Mitchell & Co.....Cleveland.  
Parker Bros. Co., Ltd.....Detroit.  
Peck, Chas. E. & W. F.....New York & Chicago.  
Prindiville & Co.....Chicago.  
Richardson, W. C.....Cleveland.  
Sullivan, D. & Co.....Chicago.  
Voss, F. D.....New York.

**IRON ORE AND PIG IRON.**

Hanna, M. A. & Co.....Cleveland.  
Pickands, Mather & Co.....Cleveland.

**LAUNCHES—STEAM, NAPHTHA, ELECTRIC.**

Georgian Bay Engineering Works.....Midland, Ont.  
Marine Construction & D. D. Co.....Mariner's Harbor, S. I., N. Y.  
Truscott Boat Mfg. Co.....St. Joseph, Mich.  
Willard, Chas. P.....Chicago.

**LIFE PRESERVERS, LIFE BOATS, BUOYS.**

Armstrong, Cork Co.....Pittsburg.  
Dreim, Thos. & Son.....Wilmington, Del.  
Kahnweiler's Sons, D.....New York.

**LIGHTS, SIDE AND SIGNAL.**

Russell & Watson.....Buffalo.

**LOGS.**

Walker & Sons, Thomas.....Birmingham, Eng.  
Also Ship Chandlers.

**LUBRICATING GRAPHITE.**

Dixon Crucible Co., Joseph.....Jersey City, N. J.

**LUBRICATORS.**

Crane Co.....Chicago.  
Lunkenheimer Co.....Cincinnati.

**LUMBER.**

Martin-Barriss Co.....Cleveland.

**MACHINISTS.**

Chase Machine Co.....Cleveland.  
Gogebic Steam Boiler Works.....Duluth, Minn.  
Hickler Bros.....Sault Ste. Marie, Mich.  
Lockwood Mfg. Co.....East Boston, Mass.  
Macbeth Iron Co.....Cleveland.  
Union Machine & Boiler Co.....Cleveland.

**MACHINE TOOLS (WOOD WORKING).**

Atlantic Works, Inc.....Philadelphia.

**MARINE RAILWAYS.**

Hickler Bros.....Sault Ste. Marie, Mich.

**MARINE GLUE.**

Ferdinand & Co., L. W.....Boston, Mass.

**MARINE RAILWAYS, BUILDERS OF.**

Crandall & Son, H. I.....East Boston, Mass.

**MATTRESSES, CUSHIONS, BEDDING.**

Fogg, M. W.....New York.

**MECHANICAL DRAFT FOR BOILERS.**

American Ship Building Co.....Cleveland.  
Detroit Ship Building Co.....Detroit.  
Great Lakes Engineering Works.....Detroit.  
Sturtevant, B. F. Co.....Hyde Park, Mass.

**MELTING POT AND PAYING LADLE.**

(For Paying Seams of Decks with Marine Glue.)  
Ferdinand & Co., L. W.....Boston.

**METALLIC PACKING.**

Katzenstein, L. & Co.....New York.

**METAL POLISH.**

Bertram's Oil Polish Co.....Boston.

**MOTORS, GENERATORS—ELECTRIC.**

Fisher Electrical Works.....Detroit.  
General Electric Co.....Schenectady, N. Y.  
Sturtevant, B. F. Co.....Hyde Park, Mass.  
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

## Buyers' Directory of the Marine Trade.—Continued.

**NAUTICAL INSTRUMENTS.**

Ritchie, E. S., &amp; Sons.....Brookline, Mass.

**NAVAL ARCHITECTS.**

Hynd, Alexander .....Cleveland.  
 Kidd, Joseph.....Duluth, Minn.  
 Lovejoy, H. O.....Buffalo.  
 Matteson & Drake.....Philadelphia.  
 Mosher, Chas. D.....New York.  
 Nacey, James .....Cleveland.  
 Rice, Henry .....Buffalo.  
 Sadler, Perkins & Field.....New York.  
 Steel, Adam .....Cleveland.  
 Wood, W. J.....Chicago.

**OAKUM.**

DeGrauw, Aymar & Co.....New York.  
 Stratford, Oakum Co.....Jersey City, N. J.

**OIL FOR PAINTING.**

Sipe &amp; Co., James B.....Allegheny, Pa.

**OIL ENGINES.**

Mietz, Aug. ....New York.

**OILS AND LUBRICANTS.**

Dixon Crucible Co., Joseph.....Jersey City, N. J.  
 Standard Oil Co.....Cleveland.

**PACKING.**

Crane Co. ....Chicago.  
 Jenkins Bros. ....New York.  
 Katzenstein, L. & Co.....New York.  
 New York Belting & Packing Co.....New York.

**PACKING TOOL.**

Matteson &amp; Drake .....Philadelphia.

**PAINTS.**

Baker, Howard H. & Co.....Buffalo.  
 Detroit Varnish Co.....Detroit.  
 Detroit White Lead Works.....Detroit.  
 Forest City Paint and Varnish Co.....Cleveland.  
 New Jersey Zinc Co.....New York.  
 Sipe & Co., James B.....Allegheny, Pa.  
 Upson-Walton Co.....Cleveland.

**PATTERN SHOP MACHINERY.**

Atlantic Works, Inc.....Philadelphia.

**PILE DRIVING AND SUBMARINE WORK.**

Buffalo Dredging Co.....Buffalo.  
 Chicago & Gt. Lakes Dredge & Dock Co.....Chicago.  
 Dunbar & Sullivan Dredging Co.....Buffalo.  
 Fitz-Simons & Connell Co.....Chicago.  
 Hickler Bros. ....Sault Ste. Marie, Mich.  
 Lake Superior Contracting & Dredging Co.....Duluth, Minn.  
 Parker Bros. Co., Ltd.....Detroit.  
 Smith Co., L. P. & J. A.....Cleveland.  
 Starke Dredge & Dock Co., C. H.....Milwaukee.  
 Sullivan, M.....Detroit.

**PIPE, WROUGHT IRON.**

Crane Co. ....Chicago.  
 Macbeth Iron Co.....Cleveland.

**PLANING MILL MACHINERY.**

Atlantic Works, Inc.....Philadelphia.

**PLATES—SHIP, STRUCTURAL, ETC.**

Otis Steel Co.....Cleveland.

**PNEUMATIC TOOLS.**

Allen, John F.....New York.

**POLISH FOR METALS.**

Bertram's Oil Polish Co.....Boston.

**PRESSURE REGULATORS.**

Kieley & Mueller .....New York.  
 Ross Valve Co.....Troy, N. Y.

**PROPELLER WHEELS.**

American Ship Building Co.....Cleveland.  
 Atlantic Works .....East Boston, Mass.  
 Cramp, Wm. & Sons.....Philadelphia.  
 Detroit Ship Building Co.....Detroit.  
 Fore River Ship & Engine Co.....Quincy, Mass.  
 Great Lakes Engineering Works.....Detroit.  
 Hyde Windlass Co.....Bath, Me.  
 Jenks Ship Building Co.....Port Huron, Mich.  
 Lockwood Mfg. Co.....East Boston, Mass.  
 Macbeth Iron Co.....Cleveland.  
 Milwaukee Dry Dock Co.....Milwaukee.  
 Newport News Ship Building Co.....Newport News, Va.  
 Phosphor Bronze Smelting Co., Ltd.....Philadelphia.  
 Roelker, H. B.....New York.  
 Sheriffs Mfg. Co.....Milwaukee.  
 Superior Ship Building Co.....Superior, Wis.  
 Thropp & Sons Co., J. E.....Trenton, N. J.  
 Trout, H. G.....Buffalo.  
 United States Ship Building Co.....New York.

**PROJECTORS, ELECTRIC.**

General Electric Co.....Schenectady, N. Y.  
 Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**PUMPS FOR VARIOUS PURPOSES.**

Blake, Geo. F., Mfg. Co.....New York.  
 Great Lakes Engineering Works.....Detroit.  
 Kingsford Foundry & Machine Works.....Oswego, N. Y.

**PUNCHES, RIVETERS, SHEARS.**

Allen, John F.....New York.

**RANGES.**

Russell &amp; Watson .....Buffalo.

**REFRIGERATING APPARATUS.**

Great Lakes Engineering Works.....Detroit.  
 Roelker, H. B.....New York.

**REGISTER FOR CLASSIFICATION OF VESSELS.**

Great Lakes Register .....Cleveland.  
 Record of American & Foreign Shipping.....New York.

**REPAIRS—ENGINE AND BOILER.**

(See also Boiler Manufacturers and Engine Builders.)  
 Georgian Bay Engineering Works.....Midland, Ont.  
 Gogebic Steam Boiler Works.....Duluth, Minn.  
 Forest City Boiler Co.....Cleveland.  
 Marine Iron Co.....Duluth, Minn.

**RIVETING MACHINES.**

Allen, John F.....New York.

**ROWBOATS.**

Mullins, W. H.....Salem, O.

**SAFETY VALVES.**

American Steam Gauge & Valve Mfg. Co.....Boston.  
 Ashton Valve Co.....Boston.  
 Crane Co.....Chicago.  
 Lunkenheimer Co.....Cincinnati.

**SAIL MAKERS.**

Baker, Howard H. & Co.....Buffalo.  
 Upson-Walton Co.....Cleveland.  
 Wilson & Silsby .....Boston.

**SALVAGE COMPANIES.**

See Wrecking Companies.

**SEARCH LIGHTS.**

General Electric Co.....Schenectady, N. Y.  
 Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

**SHEARS.**

See Punches, Rivets, and Shears.

**SHIP AND BOILER PLATES AND SHAPES.**

Otis Steel Co.....Cleveland.

**SHIP BUILDERS.**

American Ship Building Co.....Cleveland.  
 Atlantic Works .....East Boston, Mass.  
 Bertram Engine Works Co., Ltd.....Toronto, Can.  
 Buffalo Dry Dock Co.....Buffalo.  
 Cramp, Wm. & Sons.....Philadelphia.  
 Craig Ship Building Co.....Toledo, O.  
 Chicago Ship Building Co.....Chicago.  
 Detroit Ship Building Co.....Detroit.  
 Fore River Ship & Engine Co.....Quincy, Mass.  
 Great Lakes Engineering Works.....Detroit.  
 Jenks Ship Building Co.....Port Huron, Mich.  
 Lockwood Mfg. Co.....East Boston, Mass.  
 Manitowoc Dry Dock Co.....Manitowoc, Wis.  
 Milwaukee Dry Dock Co.....Milwaukee.  
 Newport News Ship Building Co.....Newport News, Va.  
 Roach's Ship Yard .....Chester, Pa.  
 Shipowner's Dry Dock Co.....Chicago.  
 Smith & Son, Abram.....Algonac, Mich.  
 United States Ship Building Co.....New York.  
 Willard, Chas. P. & Co.....Chicago.

**SHIP CHANDLERS.**

Baker, Howard H. & Co.....Buffalo.  
 Marine Mfg. & Supply Co.....New York.  
 Upson-Walton Co.....Cleveland.

**SHIP LANTERNS AND LAMPS.**

Russell &amp; Watson .....Buffalo.

**SHIP TIMBER.**

Martin-Barriss Co.....Cleveland.

**SMOOTH-ON COMPOUND, FOR REPAIRS.**

Smooth-On Mfg. Co.....Jersey City, N. J.

**STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.**

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

**STEAM VESSELS FOR SALE.**

Gilchrist & Co., C. P.....Cleveland.  
 Holmes, Samuel .....New York.  
 Lester, S. S.....Quebec, Can.  
 McCarthy, T. R.....Montreal, Can.

**STEAMSHIP LINES, PASS. AND FREIGHT.**

American Line .....New York.  
 Anchor Line .....Buffalo.  
 Boston Steamship Co.....Boston.  
 Cleveland & Buffalo Transit Co.....Cleveland.  
 Detroit & Cleveland Line.....Cleveland.  
 Erie & Western Trans. Co.....Buffalo.  
 Goodrich Trans. Co.....Chicago.  
 International Mercantile Marine Co.....Philadelphia.  
 Manitou Steamship Co.....Chicago.  
 Mexican-American S. S. Co.....New Orleans, La.  
 New York & Cuba Mail S. S. Co.....New York.  
 Niagara, St. Catharines & Toronto Ry. & Nav. Co.....St. Catharines, Ont.  
 Northern Michigan Trans. Co.....Chicago.  
 Red Star Line .....New York.  
 Richelieu & Ontario Nav. Co.....Montreal, Can.  
 United Fruit Co .....Boston.

**STEEL CASTINGS.**

Macbeth Iron Co.....Cleveland.  
 Otis Steel Co.....Cleveland.

**STEERING APPARATUS.**

American Ship Building Co.....Cleveland.  
 Chase Machine Co.....Cleveland.  
 Dake Engine Co.....Grand Haven, Mich.  
 Detroit Ship Building Co.....Detroit.  
 Hyde Windlass Co.....Bath, Me.  
 Jenks Ship Building Co.....Port Huron, Mich.  
 Marine Mfg. & Supply Co.....Cleveland.  
 Moulton Steering Engine Co.....New York.  
 Pawling & Harnischfeger .....Milwaukee.  
 Sheriffs Mfg. Co.....Milwaukee.

**SUBMARINE DIVING APPARATUS.**

Morse & Son, A. J.....Boston.  
 Schrader's Son, A.....New York.

**SURVEYORS, MARINE.**

Gaskin, Edward .....Buffalo.  
 Hynd, Alexander .....Cleveland.  
 Lovejoy, H. O.....Buffalo.  
 Matteson & Drake .....Philadelphia.  
 Parker Bros. Co., Ltd.....Detroit.  
 Nacey, James .....Cleveland.  
 Rice, Henry .....Buffalo.  
 Steel, Adam .....Cleveland.  
 Wood, W. J.....Chicago.

**TESTS OF MATERIALS.**

Hunt, Robert W. & Co.....Chicago.  
 Pittsburg Testing Laboratory, Ltd.....Pittsburg.

**TILING, INTERLOCKING RUBBER.**

New York Belting &amp; Packing Co.....New York.

**TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.**

Allen, John F.....New York.  
 Watson-Stillman Co.....New York.

**TOOLS, WOOD WORKING.**

Atlantic Works, Inc.....Philadelphia.

**TOWING MACHINES.**

American Ship Windlass Co.....Providence, R. I.  
 Chase Machine Co.....Cleveland.

**TOWING COMPANIES.**

Donnelly Salvage & Wrecking Co.....Kingston, Ont.  
 Great Lakes Towing Co.....Cleveland.  
 Midland Towing & Wrecking Co., Ltd.....Midland, Ont.

**TRAPS, STEAM.**

Kieley & Mueller .....New York.  
 Lunkenheimer Co.....Cincinnati.  
 Sturtevant Co., B. F., .....Hyde Park, Mass.

**TRUCKS.**

Boston &amp; Lockport Block Co.....Boston.

**TUBING, SEAMLESS.**

Shelby Steel Tube Co.....Pittsburg, Pa.

## Buyers' Directory of the Marine Trade.—Continued.

## VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge & Valve Mfg. Co. Boston.  
Ashton Valve Co. Boston.  
Crane Co. Chicago.  
Jenkins Bros. New York.  
Kieley & Mueller New York.  
Lunkenheimer Co. Cincinnati.  
Ross Valve Co. Troy, N. Y.

## VALVES FOR WATER AND GAS.

Ross Valve Co. Troy, N. Y.

## VARNISHES.

Detroit Varnish Co. Detroit.  
Detroit White Lead Works. Detroit.  
Forest City Paint & Varnish Co. Cleveland.  
New Jersey Zinc Co. New York.  
Also Ship Chandlers.

## VENTILATING APPARATUS FOR SHIPS.

Sturtevant, B. F. Co. Hyde Park, Mass.

## VESSEL AND FREIGHT AGENTS.

Boland, John J. Buffalo.  
Brown & Co. Buffalo.  
Eppack, C. W. & Co. Chicago.  
Fleming & Co., P. H. Chicago.  
Giering & Co., C. P. Cleveland.  
Hall & Root Buffalo.  
Helm & Co., D. T. Duluth.

## VESSEL AND FREIGHT AGENTS—Con.

Hawgood & Co., W. A. Cleveland.  
Holmes, Samuel New York.  
Hutchinson & Co. Cleveland.  
Lester, S. S. Quebec, Can.  
McCarthy, T. R. Montreal.  
Mitchell & Co. Cleveland.  
Parker Bros. Co., Ltd. Detroit.  
Prindville & Co. Chicago.  
Richardson, W. C. Cleveland.  
Sullivan, D. & Co. Chicago.

## WATER GAUGES.

Bonner & Co., Wm. T. Boston.  
Lunkenheimer Co. Cincinnati, O.

## WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co. Buffalo.  
DeGrauw, Aymar & Co. New York.  
Upson-Walton Co. Cleveland.

## WHISTLES, STEAM.

American Steam Gauge & Valve Mfg. Co. Boston.  
Ashton Valve Co. Boston.  
Lunkenheimer Co. Cincinnati.

## WINDLASSES.

American Ship Windlass Co. Providence, R. I.  
American Ship Building Co. Cleveland.  
Hyde Windlass Co. Bath, Me.  
Jenks Ship Building Co. Port Huron, Mich.  
Marine Mfg. & Supply Co. New York.

## WINCHES.

American Ship Windlass Co. Providence, R. I.  
Georgian Bay Engineering Works. Kingston, Ont.  
Hyde Windlass Co. Bath, Me.

## WOOD WORKING MACHINERY.

Atlantic Works, Inc. Philadelphia.

## WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co. Kingston, Ont.  
Great Lakes Towing Co. Cleveland.  
Midland Towing & Wrecking Co., Ltd. Midland, Ont.  
Parker Bros. Co., Ltd. Detroit.

## YACHT AND BOAT BUILDERS.

Bertram Engine Works Co., Ltd. Toronto, Can.  
Drein, Thos. & Son. Wilmington, Del.  
Georgian Bay Engineering Works. Kingston, Ont.  
Truscott Boat Mfg. Co. St. Joseph, Mich.  
Willard, Chas. P. & Co. Chicago.

## YAWLS.

Drein, Thos. & Son. Wilmington, Del.

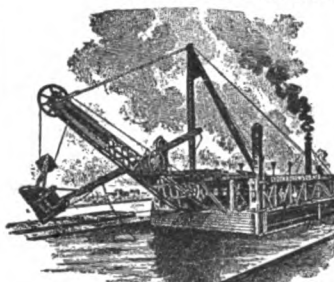
## ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW.

The star (\*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted.  
The dagger (†) indicates that advertisement appears once a month.

*Allen, John F. .... 3	Elphicke, C. W., & Co. .... 48	Lake Superior Contracting & Dredging Co. .... 54	Record of American & Foreign Shipping .... 44
Almy Water Tube Boiler Co. .... 43	Elwell, Jas. W., & Co. .... 48	Lebanon Chain Works. .... 40	Red Star Line .... 39
American Bureau of Shipping .... 44	Erie & Western Trans. Co. .... 38	LeMois Scientifique et Industriel. .... 4	Reliance Mfg. Co. .... 40
American Injector Co. .... 4		Lester, S. S. .... 48	Rice, Henry .... 49
American Line .... 30		Lockwood Mfg. Co. .... 41	Richardson, W. C. .... 48
American Ship Building Co. .... 11	Falls Hollow Staybolt Co. .... 47	Lovejoy, H. O. .... 49	*Ritchie & Sons, E. S. .... 47
American Ship Windlass Co. .... 2	Faust, Wm. H. .... 48	L. S. & M. S. Ry. .... 55	Roberts Water-Tube Boiler Co. .... 3
American Steam Gauge Co. .... 35	Ferdinand & Co., L. W. .... 4	Lunkenheimer Co. .... 46	Roelker, H. B. .... 41
Anchor Line .... 35	Fields, Capt. J. M. .... 49		Ross Valve Co. .... 46
Armstrong Cork Co. .... 56	Fisher Electrical Works .... 40		Russell & Watson. .... 45
Ashton Valve Co. .... 35	Fitz-Simons & Connell Co. .... 54	McCarthy, T. R. .... 48	
Atlantic Works .... 41	Fix's, S., Sons .... 46	McCurdy, Geo. L. .... 44	Sadler, Perkins & Field. .... 49
*Atlantic Works, Inc. .... 45	Fleming & Co., P. H. .... 48	*McNab & Harlin Mfg. Co. .... 56	Safety Car Heating & Lighting Co. .... 8
	Fletcher, W. & A., Co. .... 41	Macbeth Iron Co. .... 49	Scherzer Rolling Lift Bridge Co. .... 3-45
Babcock & Wilcox Co. .... 8	Fogg, M. W. .... 2	MacDonald, Ray G. .... 49	Schrader's Sons, A. .... 2
Balt. Anchor Co. .... 55	Fore River Ship & Engine Co. .... 41	Manitowoc Dry Dock Co. .... 41	Shaw, Warren, Cady & Oakes. .... 49
Baker, Howard H., & Co. .... 56	Forest City Boiler Co. .... 46	Manitowoc Steamship Co. .... 38	*Shelby Steel Tube Co. .... 8
*Bertram Engine Works Co., Ltd. .... 41	Forest City Paint & Varnish Co. .... 42	Marine Iron Co., Bay City, Mich. .... 41	Sheriffs Mfg. Co. .... 45
Biggs, Geo. F., Mfg. Co. .... 45	Frankfort M. A. & P. G. I. Co. .... 44	Marine Iron Co., Duluth .... 41	Shipowners' Dry Dock Co. .... 41
Boland, J. J. .... 48		*Marine Mfg. & Supply Co. .... 40	Shipping World .... 3
*Boller & Co., Wm. T. .... 35	General Electric Co. .... 56	Martin-Barriss Co. .... 43	Sipe & Co., James B. .... 6
Boston & Lockport Block Co. .... 35	*Georgian Bay Engineering Wks. .... 41	Matteson & Drake .... 40-49	*Smith & Son, Abram. .... 47
Boston Steamship Co. .... 38	Gilchrist, Albert J. .... 48	Mexican-American S. S. Co. .... 38	Smith Co., L. P. & J. A. .... 54
Brown, L. M., & Co. .... 55	Gilchrist & Co., C. P. .... 48	Midland Towing & Wrecking Co., Ltd. .... 55	Smith Coal & Dock Co., Stanley B. .... 9
Brown Hoisting Machinery Co., Inc. .... 2	Gogebic Steam Boiler Works .... 41	Mietz, Aug. .... 6	Smith, Stanley B., & Co. .... 9
Buffalo Dry Dock Co. .... 10	Goodrich Trans. Co. .... 38	Milwaukee Dry Dock Co. .... 10	Smooth-On Mfg. Co. .... 37
	Gould, Holding & Masten .... 48	Mitchell & Co. .... 48	*Standard Gauge Mfg. Co. .... 55
	Great Lakes Engineering Works .... 12	Morse & Son, A. J. .... 46	*Standard Oil Co. .... 43
	Great Lakes Register .... 52	Moshier Water-Tube Boiler Co. .... 42	Starke Dredge & Dock Co., C. H. .... 54
	*Great Lakes Towing Co. .... 11	Moulton Steering Engine Co. .... 42	Steel, Adam. .... 49
		Mullins, W. H. .... 45	Stirling Co. .... 8
*Hadden Anchor-Rockland Machine Co. .... 13	Hall & Root. .... 46	Nacey, James. .... 49	Stratford Oakum Co., Geo. .... 45
Chase Machine Co. .... 6	Hanna, M. A., & Co. .... 47	Newport News Ship Building & Dry Dock Co. .... 7	Sturtevant, B. F., Co. .... 56
Chicago & Grt. L. Dredge & Dock Co. .... 54	Hawgood & Co., W. A. .... 48	New York & Cuba Mail S. S. Co. .... 39	Sullivan, M. .... 54
Chicago Ship Building Co. .... 10	Helm & Co., D. T. .... 48	Niagara, St. C. & T. Ry. & N. Co. .... 38	Sullivan & Co. .... 48
Cleveland City Forge & Iron Co. .... 47	Hickler Bros. .... 54	Northern Mich. Trans. Co. .... 38	Superior Ship Building Co. .... 10
Cleveland & Buffalo Transit Co. .... 38	Holmes, Samuel. .... 48	Northwestern Steam Boiler & Mfg. Co. .... 42	
Continental Iron Works .... 2	Holzappel's American Compositions .... 45	Otis Steel Co. .... 3	Taylor Water-Tube Boiler Co. .... 43
*Contractors Supply & Equipment Co. .... 9	Hoyt, Dustin & Kelley .... 48	Parker Bros. Co. .... 48	*Temple Pump Co. .... 45
Cory, Chas. & Son. .... 46	Hunt, Robert W., & Co. .... 49	Pawling & Harnischfeger .... 42	Thropp, J. E., & Sons Co. .... 46
*Craw 2 Ship Building Co. .... 11	Hutchinson & Co. .... 48	Peck, Chas. E. & W. F. .... 44	Trout, H. G. .... 45
Craw, Wm. & Sons, S. & E. B. Co. .... 41	Hyde Windlass Co. .... 56	*Pemberthy Injector Co. .... 8	Truscott Boat Mfg. Co. .... 40
*Crandall & Son, H. I. .... 3	Hynd, Alexander. .... 49	Phosphor Bronze Smelting Co., Ltd. .... 40	
Crane Co. .... 43-44		Pickands, Mather & Co. .... 47	Union Machine & Boiler Co. .... 47
D & C Line. .... 38	International Mercantile Marine Co. .... 39	Pittsburg Coal Co. .... 9	United Fruit Co. .... 38
Dale Engine Co. .... 42	Ironville Dock & Coal Co. .... 47	Pittsburg Testing Laboratory, Ltd. .... 49	Upson-Walton Co. .... 56
Deaumont Drug & Chemical Wks. .... 9	Jenkins Brothers .... 56	Potter & Potter. .... 49	
DeGrauw, Aymar & Co. .... 47	Jenks Ship Building Co. .... 11	Potter, J. D. .... 49	Victor Metals Co. .... 2
Delaney, Belleville & Co. .... 35	Kahnweiler's Sons, David. .... 40	Powell, Ambrose V. .... 49	Walker, Thomas, & Son. .... 43
DelaWare River Iron S. B. & E. Works. .... 41	Katzenstein, L., & Co. .... 40	Prindville & Co. .... 48	Ward Line. .... 39
Detroit Ship Building Co. .... 11	Kidd, Joseph. .... 49		*Watson-Stillman Co. .... 55
Detroit White Lead Works. .... 2	*Kieley & Mueller. .... 35		Westinghouse Electric & Mfg. Co. .... 53
Detroit City Forge & Iron Co. .... 46	Kingsford Foundry & Machine Works. .... 42		White, Johnson, McCashin & Cannon. .... 48
Detroit Salvage & Wrecking Co. .... 44	Kremer, C. E. .... 48		*Willard, Chas. P., & Co. .... 35
Drein, Thos. & Son. .... 40			Wood, W. J. .... 49
Dunbar & Sullivan Dredging Co. .... 54			



## CHICAGO & GREAT LAKES DREDGE AND DOCK CO.



OWNS AND OPERATES THE PLANTS  
OF THE FORMER COMPANIES:

Lydon & Drews Co.,  
Hausler & Lutz Co.,  
Green's Dredging Co.,  
Chicago Star Con. & D.  
Co.,  
McMahon & Montgomery  
Co.,  
Chicago Dredging & Dock  
Co.,  
Griffith, McDermott &  
Watt Dredging Co.

Contractors for

**RIVER AND HARBOR IMPROVEMENTS.**

Main Office: -1310-1322 Chamber of Commerce - CHICAGO.

## Dunbar & Sullivan Dredging Co., of Buffalo, N. Y.

Will contract to remove ROCK or EARTH on the Great Lakes to 40 ft. depth.  
To remove ROCK on Atlantic Coast to 40 ft. depth.

**THAT'S ALL.**

We SOMETIMES rent plant to responsible parties at OUR terms.

### Dredges.

Brian Boru, Steel.  
Tipperary Boy, Steel.  
Erin Go Braugh.

### Drill Boats.

Geo. A. Howells and  
another, both Steel.

### Tugs.

Shaughraun, Steel.  
Phil Sheridan, Steel.  
Spalpeen, Steel.  
Paddy Miles, Steel.  
Shaun Rhue, Steel.

### Derrick.

Faugh a Ballaugh.

### Scows.

Monroe Doctrine, 600 yds., Steel.  
Protective Policy, 500 yds., Steel.  
Reciprocity, 600 yds., Steel.  
Cuba Libre, 250 yds., Steel.  
Gold Standard, 250 yds., Steel.  
No. 5, 600  
No. 6, 600  
No. 7, 600  
No. 8, 600

McMyler derrick handling 10  
tons at 75 ft. radius.

**Small Scows.**

## The Fitz-Simons & Connell Co.

CONTRACTORS  
—FOR—  
PUBLIC WORKS

DREDGING  
DOCKS  
PILE DRIVING  
BREAKWATERS

TUNNELS  
CANALS  
BRIDGES  
FOUNDATIONS

Offices: 1010-1014 Tacoma Building, Chicago.

## HICKLER BROTHERS

### MARINE RAILWAY

Capacity, 1,000 tons.

Draft, 7½ ft. forward, 13½ ft. aft.

Length on keel blocks, 180 ft.; over all, 190 ft.

Machine Shop, Foundry and Steam Forge.

Dredges, Drill Boats and Derrick Scows.

SAULT STE. MARIE, - MICH.

## Lake Superior Contracting & Dredging Co.

## GENERAL CONTRACTORS

For Public and Private Work and  
River and Harbor Improvements.

Offices Wolwin Building,

Duluth, Minn.

## THE L. P. & J. A. SMITH COMPANY.

CONTRACTORS FOR PUBLIC WORKS

Dredging,	Dry Docks and	Bridges,
Harbor Work,	Pier Building,	Submarine
Pile Driving,	Railroads,	Foundations,
Breakwaters,	Canals,	Etc., Etc.

Offices: Williamson Bldg., Cleveland, O.

## C. H. STARKE DREDGE & DOCK CO.,

Contractors for Public Works.

DREDGING, PILE DRIVING,  
—AND—  
SUBMARINE PIPE LAYING.

Canal Street, West of First Avenue,

Milwaukee, - - Wisconsin.

## N. SULLIVAN,

DREDGING OF ALL KINDS.

THE REMOVING OF DEEP  
WATER EARTH AND ROCK  
A SPECIALTY. - - -

53 Woodward Ave. Terrace,  
DETROIT, - - - MICH.





## Marine Hydraulic Jacks.

THE first Hydraulic Jack we built very many years ago would be looked upon as primitive and ridiculous alongside of any one of the nearly 300 styles we build to-day. For these many years of Jack Building experience has taught us how to build Hydraulic Jacks that are **STRONG, CERTAIN and RELIABLE**, without a single weak spot.

In ship building as well as on board ship there is often call for a jack to fit in some small, peculiar shaped space.

Look over our Jack Catalog No. 61, Edition "N."

**WATSON-STILLMAN CO.,**

Offices:  
46 Dey Street, NEW YORK.  
453 The Rookery, CHICAGO.  
Works: Aldene, Union Co., N. J.

JAMES PLAYFAIR, { Pres't and  
Gen. Mgr. D. L. WHITE, Vice President.  
J. W. BENSON, Secretary and Treasurer.

## MIDLAND TOWING and WRECKING CO., Ltd.

MIDLAND, ONT., CANADA.

FIRST-CLASS TUGS FOR WRECKING, RAFT TOWING, Etc., STEAM PUMPS, DIVERS, JACKS, HAWSERS, LIGHTERS.



One of these binders, that will hold

52 ISSUES of the

Marine Review will be mailed to any address on receipt of

**\$1.**

MARINE REVIEW,  
39-41 Wade Bldg.  
CLEVELAND, O.

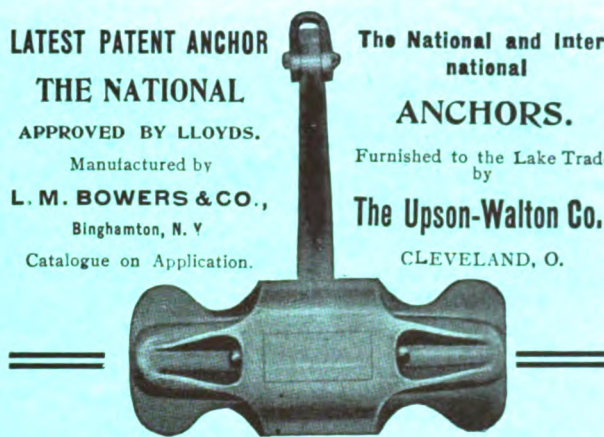
## LATEST PATENT ANCHOR THE NATIONAL APPROVED BY LLOYDS.

Manufactured by  
**L. M. BOWERS & CO.,**  
Binghamton, N. Y.  
Catalogue on Application.

## The National and International ANCHORS.

Furnished to the Lake Trade by

**The Upson-Walton Co.,**  
CLEVELAND, O.



## IN A RECENT TEST

MADE BY **UNCLE SAM**,

where both Foreign and Domestic Anchors were considered, the ...

## Baldt Stockless Anchor was the only one approved

For Catalogue and particulars address

**The Baldt Anchor Co., Chester, Pa.**

## LAKE SHORE AND MICHIGAN SOUTHERN RY.

Eastward	Arrive from West	Depart East
No. 18, Southwestern Limited		*1:50 a.m.
No. 22, Lake Shore Limited	*2:12 a.m.	*2:20 a.m.
No. 20, Chicago and Cleveland Exp.	*7:20 a.m.	
No. 28, New York and Boston Exp.	*7:40 a.m.	*8:00 a.m.
No. 40, Toledo and Buffalo Accom.	†10:00 a.m.	†10:30 a.m.
No. 32, Fast Mail	*11:25 a.m.	*11:30 a.m.
No. 48, Accommodation via Sandusky	†1:40 p.m.	
No. 42, Boston-New York Express		*11:45 a.m.
No. 44, Cleveland and New York Spl		*3:00 p.m.
No. 46, Southwestern Express		*3:10 p.m.
No. 116, Ashtabula Accommodation		†4:30 p.m.
No. 6, Limited Fast Mail	*5:40 p.m.	*5:45 p.m.
No. 26, 20th Century Limited	*7:40 p.m.	*7:43 p.m.
No. 10, Chicago, N.Y. & Boston Spl.	*7:30 p.m.	*7:50 p.m.
No. 16, New England Express	*10:30 p.m.	*10:35 p.m.
No. 2, Day Express	†9:10 p.m.	†9:25 p.m.
No. 126, Norwalk Accommodation	†7:55 a.m.	
Westward	Arrive from East	Depart West
No. 7, Exposition Limited	*12:50 a.m.	
No. 11, Southwestern Limited	*2:55 a.m.	
No. 9, Day Express		†6:10 a.m.
No. 15, Boston and Chicago Special	*3:10 a.m.	*3:15 a.m.
No. 19, Lake Shore Limited	*7:15 a.m.	*7:25 a.m.
No. 23, Western Express	*10:30 a.m.	*10:35 a.m.
No. 29, Southwestern Special	†11:10 a.m.	
No. 33, Southwestern Express	*12:25 p.m.	
No. 133, Cleveland and Detroit Exp.		*12:45 p.m.
No. 47, Accommodation	†11:00 a.m.	†3:00 p.m.
No. 141, Sandusky Accommodation		†3:10 p.m.
No. 43, Fast Mail	*4:35 p.m.	*4:40 p.m.
No. 127, Norwalk Accommodation		†5:10 p.m.
No. 37, Pacific Express	*6:50 p.m.	*7:20 p.m.
No. 3, Fast Mail Limited	*10:50 p.m.	*10:55 p.m.
No. 115, Ashtabula Accommodation	*8:30 a.m.	

\*Daily. †Except Sunday. ‡Except Monday.  
Trains Nos. 23, 28 and 37 run via Erie Station.  
City Ticket Office, 237 Superior St.



# MARINE LIGHTING SETS.

**We Build Both  
Engine and  
Generator.**

Send for Bulletin G.

**B. F. Sturtevant Co.**

**BOSTON, MASS.**

General Works and  
Office:

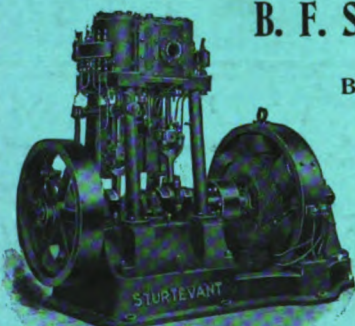
Hyde Park, Mass.

**NEW YORK.**

**PHILADELPHIA.**

**CHICAGO.**

**LONDON.**



(8)



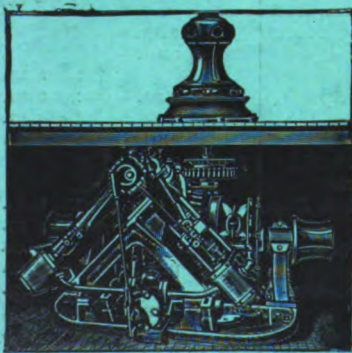
## A FIRST-CLASS Barometer

will often pay for itself a  
thousand fold.

If you wish to make an investment of that character, write us. We carry a full line with or without thermometers.

**The UPSON-WALTON Co.**  
CLEVELAND, O.

## WINDLASSES AND CAPSTANS



**HYDE WINDLASS COMPANY,**

**BATH MAINE.**

The Hyde Steam and Power Windlasses and Capstans are the best in the market.

They have been selected for most of the vessels now building for the Navy Department, Revenue Marine, Light-house Board and United States Coast Survey

They are being furnished for the majority of the highest class Steam Ships, Merchant Vessels and Yachts now building.

## AS A BLOW-OFF VALVE

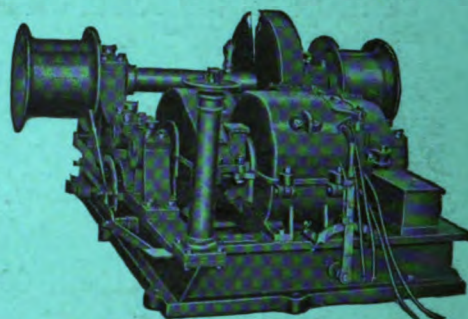


we especially recommend the JENKINS BROS. Y VALVE, which is so designed that there is no pocket or any obstruction to the passage of steam. It is also the most satisfactory valve to use in any place where the passage of a thick fluid is required.

Contains the Jenkins Disc, and has the same interchangeable features as our regular Globe and Angle Valves.

JENKINS BROS., New York, Boston, Philadelphia, Chicago.

## GENERAL ELECTRIC COMPANY.



Deck Winch connected to General Electric Motor.

GENERAL OFFICE: SCHENECTADY, N. Y.

Cleveland Office, CITIZENS BUILDING.

Sales Offices  
in all Large Cities

# Marine Repairs AND Castings

**The Macbeth Iron Company,**  
CLEVELAND, OHIO,

## LIFE PRESERVERS—BUOYS.

Acme. Solid Cork. Granulated Cork. Each Preserver stamped by U. S. Inspector guaranteeing proper buoyancy. Cork Filled Yacht Fenders. Cork Mooring Buoys. Material and Finish Guaranteed. Orders filled promptly.

## ARMSTRONG CORK COMPANY.

Boston. New York. Philadelphia. Pittsburg. Chicago.  
St. Louis. Baltimore.

**Howard H. Baker & Co.,**  
SHIP CHANDLERS  
and SAIL MAKERS

18 to 26 Terrace,

BUFFALO, N. Y.